

## **CARDIOVASCULAR TECHNOLOGIST**

92.5 Semester Credit Hours

Approximate Duration in Weeks: 91 (for Day classes) and 107 (for Evening classes)

### **Program description**

Cardiovascular Technologists conduct tests on cardiovascular systems of patients for diagnostic purposes. They may conduct or assist in electrocardiograms, and cardiac catheterizations, and similar tests.

In this program the students will learn about the normal physiology as well as the pathology of the heart and blood vessels. The program comprises of modules like Medical Terminology, Anatomy & Physiology, Ultrasound Physics, Scanning modules like vascular and echocardiography. The coursework also includes 800 hours of externship which will give students an opportunity to practice what they learned in the class. Students can also learn plenty of job related situations and how to handle these situations while working under the supervision of a trained professional in the field. The course utilizes the instructor-led method of teaching. Each module in the program will have a particular set of books and materials to serve as the fundamental reference guide of the subject. A step-by-step procedure is employed to walk the students through each chapter or topic.

### **Program Objective**

The objective of the program is to provide the required knowledge and skills to students in order to become successful Cardiovascular Technologists in the future.

### **Professional Credentials**

After completion of the program student may appear for certification examinations offered by: [Cardiovascular Credentialing International](#) (CCI) and/or American Registry for Diagnostic Medical Sonography (ARDMS)

Students may appear for Registered Cardiac Sonographer (RCS) exam or Registered Vascular Specialist (RVS) exam through [Cardiovascular Credentialing International](#) (CCI). For more information, please visit <http://cci-online.org/content/examinations-offered>.

Students may also appear for Registered Diagnostic Cardiac Sonographer (RDCS) exam and/or Registered Vascular Technologist (RVT) exam through American Registry for Diagnostic Medical Sonography (ARDMS). Students without a bachelor's degree and who wish to apply for the ARDMS specialty exam will need to first gain additional clinical experience to become eligible to take the ARDMS specialty exam. The additional clinical experience could be gained by working as an ultrasound/vascular sonographer for a minimum of 12 months or 1680 hours. ARDMS does not accept volunteer, instructorship, unpaid, barter or veterinarian experience. Clinical experience earned to document the education requirement cannot also be used to support the clinical requirement. To learn more about the pre-requisites, please visit: <http://www.ardms.org/ARDMS%20Documents/Prerequisites/ARDMS-461%20General%20Prerequisites%202018.pdf>.

### **Employment**

A Cardiovascular Technologist performs echocardiography according to the established practices and procedures, providing preliminary diagnostic evaluation and notifying cardiologists of results of examinations. The technician consults with cardiologist to establish requirements for non-standard examinations and determines technical factors to satisfy

requirements. He or she is familiar with standard concepts, practices and procedures within a particular field; Relying on experience and judgment to plan and accomplish goals as well as performing a variety of related tasks. The technician usually works under general supervision and typically reports to a manager.

## Program Layout

Term	Module	Course Title	Sem Credit
<b>Term I</b>			
	<b>Mod 1</b>	BIO111 Anatomy and Physiology	13.0
	<b>Mod 2</b>	PTC 110 Patient Care	2.0
<b>Term II</b>			
	<b>Mod 1</b>	SPI 222 Ultrasound Physics & Doppler	20.5
<b>Term III</b>			
	<b>Mod 1</b>	AEC 233 Adult Echo 1	16.0
	<b>Mod 2</b>	AEC 234 Adult Echo 2	6.5
<b>Term IV</b>			
	<b>Mod 1</b>	DMS 243 Vascular Scanning	16.0
<b>Term V</b>			
	<b>Mod 1</b>	CVT 254 Pre - Clinical	1.0
	<b>Mod 2</b>	CVT 255 CVT Externship	17.5
			<b>92.5</b>

**Total Semester Credits - 92.5**

## Course Description

### **BIO111 Anatomy and Physiology**

The module will give introduction to anatomy, the science of body structure, and the physiology, the study of body function. The anatomy and physiology of the body are closely related, and this topic is the basic introduction to all those relationships.

The introduction covers following topics:

Introduction to Human Body, The Skeletal System, Lymphatic System, The Muscular System, The Endocrine System, The Circulatory System, The Respiratory System, The Digestive System, Cell & its Structure & functions, The Urinary System and The Reproductive System.

This module will also cover a comprehensive study of the more common medical roots, prefixes and suffixes. The topic will relate medical language used in medical field.

### **PTC 110 Patient Care**

The topics covered under this module are:

Patient Care Techniques, Safety & Communication: bio-effects of ultrasound, monitoring of patient, common emergency handling, vital signs, assisting patient transfer and movement, and communication modes; Infection Control: terminology and basics of asepsis, cycle of infection, standard Precautions – hand washing, wearing gloves, gowns, masks, precautions for transmission of infection and disposal of contaminated material used; Legal and Ethical Principles: patient identification, clinical indication comparison, terminology of legal issues, patient's rights- includes informed consent, confidentiality (HIPAA), Patient's bill of rights and ethics of ultrasound technologist.

### **SPI 222 Ultrasound Physics & Doppler (core module)**

The student will learn about the parameters of sound wave, pulsed ultrasound, interaction of sound with different media, range equation, axial resolution, types of transducers, characteristics of sound beams, display modes, two-dimensional imaging, real- time imaging, displays and image storage, dynamic range, and harmonics. Students will also cover various sections of instrumentation and by the end of the class will have a complete understanding of Doppler.

Required pre-requisite for the module: BIO 111.

### **AEC 233 Adult Echo (Core Module)**

In this module covers the basic introduction to echocardiography which includes the Heart Doppler – velocities and pressures Trans esophageal and stress echo Cardiac masses, infection and congenital abnormalities. The students are made aware about the various features of echocardiography and the ultrasound production and detection and interpretation, echo techniques in common clinical use, the indication of echo.

Required pre-requisite for the module: SPI 223.

### **AEC 234 Adult Echo (Core Module)**

In this module covers the specific pathologies related to the congenital heart disease and great vessels – Aorta. The students are made aware about the various features on echocardiography related to these pathologies.

Required pre-requisite for the module: AEC 233.

### **DMS 243 Vascular Scanning (core module)**

This module covers the basic introduction to the vascular ultrasound. The module covers the basic concept about vasculature, the vascular anatomy and pathology related to vessels. Required pre-requisite for the module: SPI 222.

**CVT 254 Pre - Clinical (core module)**

In this module, the student will be required to practice the clinical protocols learned in all the core scanning modules. The student will practice and review the protocols under the supervision of the clinical instructor covering the scanning protocols of Echocardiography and Vascular modules.

Required pre-requisite for the module: AEC 233 and DMS 243.

**CVT 255 CVT Externship (core module)**

This course will provide the student with hands-on experience in a physician's office, hospital, or imaging centers under the supervision and control of the AIHT, overseen by a designated site supervisor. Externships allow students to develop skills and contacts within the profession while they explore various career opportunities.

Required pre-requisite for the module: CVT 254.