

Cardiovascular Technology

Cardiovascular Technology (A45170)

Degree Awarded

The Associate in Applied Science Degree Cardiovascular Technology is awarded by the college upon completion of this program.

Admissions

- Complete a Central Piedmont admissions application.
- Admission to the Cardiovascular Technology program is competitive. Please note that, in addition to the college application, students also must complete a separate application to apply specifically for the program.
- The program application is available on the Cardiovascular Technology website.
- Students must be selected to enter the program. Upon acceptance and enrollment in the program, students must take all courses as scheduled and sequenced.

Program Accreditation

Upon the recommendation of the Joint Review Committee on Education in Cardiovascular Technology (JRC-CVT), the Cardiovascular Technology Program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) at the associate degree level for two concentrations:

- Non-Invasive Cardiology (Adult Echocardiography) concentration, and
- Invasive Cardiology (Invasive Cardiovascular Technology) concentration.

The Commission on Accreditation of Allied Health Education Programs (CAAHEP)
25400 US Highway 19 North
Suite 158, Clearwater, FL 33763
caahep.org
727-210-2350

Notes

In addition to tuition and textbooks, costs of this program include the following: scrubs, lab coat, radiation monitoring badge, CVT patch; student picture ID; a physical examination including drug screening test; immunizations such as tetanus toxoid, hepatitis B vaccinations; TB test; blood test (VDRL, rubella titer, etc.), current CPR certification and criminal background check.

All students must provide a certificate of health and accident insurance. In order to participate in clinical education experiences at health care facilities, students may be required to submit results of a NC state or national criminal background check at their own expense. As a condition of program admission, students may be required to verify that they are United States citizens or are otherwise legally authorized residents of the United States.

All students enrolled in the Cardiovascular Technology program take the same Core courses for the first semester. Upon admission, applicants

select either the Invasive or Noninvasive specialty track. Students enroll in Core courses of their specialty track in the fall term of the second year.

Graduates selecting the non-invasive track are eligible for the Noninvasive Registry to become a Registered Diagnostic Cardiac Sonographer. Graduates selecting the invasive track are eligible for the Invasive Registry to become a Registered Cardiovascular Invasive Specialist. Graduates may be employed in hospitals, clinics and cardiology offices. Registry status, in specialty field, is required for employment.

Contact Information

The Agnes Binder Weisiger Cardiovascular Technology program is in the Therapy & Acute Care Division. Division offices are located on 3rd floor in the Belk Wing (BL) of the Health Careers Building on Central Campus.

For an admission packet, frequently asked questions and other information, visit the Cardiovascular Technology website, or call the Program Chair at 704.330.6258 or the Admissions Specialist at 704.330.6284.

Invasive Track

General Education Requirements

ENG 111	Writing and Inquiry	3.0
PSY 150	General Psychology	3.0
Select 3 credits from the following:		3.0
MAT 143	Quantitative Literacy	
MAT 152	Statistical Methods I	
MAT 171	Precalculus Algebra	
ACA 122	College Transfer Success	1.0
Take 3 credits from the following:		3.0
ENG 112	Writing and Research in the Disciplines	
ENG 113	Literature-Based Research	
ENG 114	Professional Research & Reporting	
Select 3 credits of the following:		3.0
ART 111	Art Appreciation	
ART 114	Art History Survey I	
ART 115	Art History Survey II	
DRA 111	Theatre Appreciation	
HUM 120	Cultural Studies	
HUM 130	Myth in Human Culture	
MUS 110	Music Appreciation	
MUS 112	Introduction to Jazz	
PHI 215	Philosophical Issues	
PHI 240	Introduction to Ethics	
REL 110	World Religions	

Major Requirements

NCT 134	Cardiovascular Anatomy and Physiology	4.0
ICT 113	Electrocardiography	4.0
ICT 110	Invasive Fundamentals	3.0
ICT 136	Cardiac and Peripheral Vascular Invasive I	6.0
ICT 140	Cardiovascular (CV) Hemodynamics I	2.0
ICT 214	Cardiac and Peripheral Vascular Invasive II	9.0
ICT 218	Invasive Pharmacology	2.0
ICT 234	Cardiac and Peripheral Vascular Invasive III	13.0
ICT 236	Cardiovascular (CV) Hemodynamics II	2.0

Other Major Requirements:

Select one of the following:	5.0
BIO 163 Basic Anatomy & Physiology	
BIO 168 Anatomy and Physiology I & BIO 169 and Anatomy and Physiology II	
Select 4.0 credits from the following:	4.0
PHY 151 College Physics I	
PHY 110 Conceptual Physics	
PHY 110A Conceptual Physics Lab	
MED 120 Survey of Medical Terminology or MED 121 Medical Terminology I	2.0
Total Credits	72

Non-Invasive Track

General Education Requirements

ENG 111 Writing and Inquiry	3.0
PSY 150 General Psychology	3.0
Select 3 credits from the following:	3.0
MAT 143 Quantitative Literacy	
MAT 152 Statistical Methods I	
MAT 171 Precalculus Algebra	
ACA 122 College Transfer Success	1.0
Take 3 credits from the following:	3.0
ENG 112 Writing and Research in the Disciplines	
ENG 113 Literature-Based Research	
ENG 114 Professional Research & Reporting	
Select 3 credits of the following:	3.0
ART 111 Art Appreciation	
ART 114 Art History Survey I	
ART 115 Art History Survey II	
HUM 120 Cultural Studies	
HUM 130 Myth in Human Culture	
MUS 110 Music Appreciation	
MUS 112 Introduction to Jazz	
PHI 215 Philosophical Issues	
PHI 240 Introduction to Ethics	
REL 110 World Religions	

Major Requirements

NCT 134 Cardiovascular Anatomy and Physiology	4.0
ICT 113 Electrocardiography	4.0
NCT 110 Echo Fundamentals	3.0
NCT 133 Cardiovascular Ultrasound Principles	3.0
NCT 143 Echocardiography I	6.0
NCT 251 Echocardiography II	8.0
NCT 253 Hemodynamic Echocardiographic Principles	3.0
NCT 273 Echocardiography III	14.0
Select one of the following:	5.0
BIO 163 Basic Anatomy & Physiology	
BIO 168 Anatomy and Physiology I & BIO 169 and Anatomy and Physiology II	
Select 4.0 credits from the following:	4.0
PHY 110 Conceptual Physics	

PHY 110A Conceptual Physics Lab	
PHY 151 College Physics I	
MED 120 Survey of Medical Terminology or MED 121 Medical Terminology I	2.0
Total Credits	72

ICT 110. Invasive Fundamentals. 3.0 Credits. Class-2.0. Clinical-0.0. Lab-2.0. Work-0.0
 This course provides information related to the profession and practice of invasive cardiovascular technology. Emphasis is placed on medical-legal and ethical aspects of healthcare, patient safety principles, basic invasive principles and cardiovascular imaging modalities. Upon completion, students should be able to demonstrate an understanding of basic invasive principles, cardiovascular imaging modalities, medical-legal and ethical aspects and safety practices.
 Corequisites: Take all: ICT 113 and NCT 134

ICT 113. Electrocardiography. 4.0 Credits. Class-3.0. Clinical-0.0. Lab-2.0. Work-0.0
 This course introduces the principles of electrocardiography, ECG rhythm recognition, methods of arrhythmia intervention and cardiac pacemaker therapy. Topics include rhythm strip and 12-lead analysis, identification of conduction abnormalities, and pharmacologic and electrical treatment methods. Upon completion, students should be able to describe electrical function, detect a variety of arrhythmias and describe their treatment methods and analyze 12-lead electrocardiograms.
 Corequisites: Take One: ICT 110, NCT 110, or NCT 134

ICT 136. Cardiac and Peripheral Vascular Invasive I. 6.0 Credits. Class-3.0. Clinical-6.0. Lab-2.0. Work-0.0
 This course provides an introduction to diagnostic techniques and equipment utilized in the invasive labs. Emphasis is placed on diagnostic cardiac and peripheral vascular catheterization principles, instrumentation, patient care techniques and the development of basic invasive lab skills. Upon completion, students should be able to identify cardiovascular anatomy through angiographic assessment, provide basic patient care and demonstrate basic invasive lab skills.
 Prerequisites: Take all: ICT 110, ICT 113, and NCT 134
 Corequisites: Take ICT 140

ICT 140. Cardiovascular (CV) Hemodynamics I. 2.0 Credits. Class-2.0. Clinical-0.0. Lab-0.0. Work-0.0
 This course provides an introduction to the hemodynamic principles of the cardiac catheterization lab. Emphasis is placed on pressure acquisition, basic waveform analysis and hemodynamic calculations. Upon completion, students should be able to discuss the pressure acquisition process, identify cardiac pressures, determine valve conditions, and perform basic hemodynamic calculations.
 Prerequisites: Take all: ICT 110, ICT 113, and NCT 134
 Corequisites: Take ICT 136

ICT 214. Cardiac and Peripheral Vascular Invasive II. 9.0 Credits.

Class-3.0. Clinical-15.0. Lab-2.0. Work-0.0

This course introduces the student to advanced diagnostic and interventional techniques and instrumentation used in invasive labs. Emphasis is placed on functional assessment, coronary interventional instrumentation, emergency treatments, and increasing clinical skills in clinical rotations. Upon completion, students should be able to describe peripheral vascular and coronary interventional techniques and demonstrate clinical skills with increased competency in the clinical setting.

Prerequisites: Take ICT 136 ICT 140, minimum grade of C

Corequisites: Take ICT 218

ICT 218. Invasive Pharmacology. 2.0 Credits.

Class-2.0. Clinical-0.0. Lab-0.0. Work-0.0

This course introduces the student to the essential medications and medical therapies used in the invasive catheterization labs. Emphasis is placed on indications, contraindications, routes, dosages, and adverse effects of the primary and secondary medications used in cardiovascular labs. Upon completion, students should be able to identify indications, side effects, contraindications, dosages, complications, identify trade and generic names and perform medication calculations.

Prerequisites: Take all: ICT 136 and ICT 140

Corequisites: Take ICT 214

ICT 234. Cardiac and Peripheral Vascular Invasive III. 13.0 Credits.

Class-3.0. Clinical-30.0. Lab-0.0. Work-0.0

This course introduces the student to advanced cardiac interventional techniques, peripheral vascular intervention techniques and increased clinical rotations. Emphasis is placed on identification of advanced disease states, structural heart and peripheral vascular interventional techniques, and increasing clinical skills in clinical rotations. Upon completion, students should be able to identify advanced diseased states, interventional techniques, and instrumentation and demonstrate entry level skills in the clinical setting.

Prerequisites: Take ICT 214, minimum grade of C

Corequisites: Take ICT 236

ICT 236. Cardiovascular (CV) Hemodynamics II. 2.0 Credits.

Class-2.0. Clinical-0.0. Lab-0.0. Work-0.0

This course introduces students to advanced cardiac conditions and disease states found in the invasive lab environment. Emphasis is placed on identifying advanced cardiovascular conditions, performing advanced hemodynamic calculations, and identifying congenital malformations through hemodynamic pressures. Upon completion, students should be able to identify advanced cardiovascular conditions, perform hemodynamic calculations and identify congenital malformations through hemodynamic pressures.

Prerequisites: Take all: ICT 214 and ICT 218

Corequisites: Take ICT 234

NCT 110. Echo Fundamentals. 3.0 Credits.

Class-2.0. Clinical-0.0. Lab-3.0. Work-0.0

This course provides information related to the profession and practice of echocardiography. Emphasis is placed on medical-legal and ethical aspects of healthcare, patient centered care, understanding basic echocardiography imaging views and cardiovascular imaging modalities. Upon completion, students should be able to demonstrate an understanding of basic echocardiography imaging views, cardiovascular imaging modalities, medical-ethical issues and patient care practices.

Corequisites: Take all: ICT 113 and NCT 134

NCT 133. Cardiovascular Ultrasound Principles. 3.0 Credits.

Class-3.0. Clinical-0.0. Lab-0.0. Work-0.0

This course introduces the principles of ultrasound applications and instrumentation of cardiovascular imaging procedures. Emphasis is placed on the physical principles of cardiovascular imaging as a diagnostic tool, instrumentation and applicable effects, and biosafety issues. Upon completion, students should be able to discuss applications of ultrasound imaging, understand instrumentation applications and improve quality imaging while maintaining bioeffects standards.

Prerequisites: Take all: ICT 113, NCT 110, and NCT 134

Corequisites: Take NCT 143

NCT 134. Cardiovascular Anatomy and Physiology. 4.0 Credits.

Class-4.0. Clinical-0.0. Lab-0.0. Work-0.0

This course provides information related to cardiovascular anatomy and physiology. Emphasis is placed on the hemodynamics of pathophysiological disease states, embryology and the diagnosis and treatment of cardiovascular diseases. Upon completion, students should be able describe normal and abnormal cardiovascular diseases, associated hemodynamic findings, and treatment options.

Corequisites: Take One Set: Set 1: ICT 113 and ICT 110; Set 2: ICT 113 and NCT 110

NCT 143. Echocardiography I. 6.0 Credits.

Class-3.0. Clinical-6.0. Lab-3.0. Work-0.0

This course introduces echocardiography procedures, cardiovascular imaging modalities and their applications in the diagnosis of cardiovascular diseases. Emphasis is placed on the diagnostic capabilities of echocardiography related to clinical presentations of cardiovascular diseases and development of basic imaging skills. Upon completion, students should be able to perform basic echocardiography/Doppler examinations and describe the diagnostic information obtained by noninvasive procedures.

Prerequisites: Take all: ICT 113, NCT 110, and NCT 134

Corequisites: Take NCT 133

NCT 251. Echocardiography II. 8.0 Credits.

Class-2.0. Clinical-15.0. Lab-2.0. Work-0.0

This course introduces advanced echocardiography/Doppler techniques, modalities, and hemodynamic assessments utilized for the diagnosis of acquired and congenital cardiovascular diseases. Emphasis is placed on protocols, interpretation of echocardiography/Doppler data with correlation to the clinical presentation of disease states in the clinical setting. Upon completion, students should be able to identify abnormal heart diseases through analysis and correlation of imaging data and demonstrate increasing clinical skill development.

Prerequisites: Take NCT 133 NCT 143, minimum grade of C,

Corequisites: Take NCT 253

NCT 253. Hemodynamic Echocardiographic Principles. 3.0 Credits.

Class-2.0. Clinical-0.0. Lab-2.0. Work-0.0

This course provides an introduction to the hemodynamic approach in performing an echocardiogram to detect cardiovascular heart disease. Emphasis is placed on the applications of hemodynamic calculations in valvular heart disease and development of quality standard practices for quality patient care outcomes. Upon completion, students should be able to perform hemodynamic calculations on an echocardiogram.

Prerequisites: Take NCT 133 NCT 143, minimum grade of C

Corequisites: Take NCT 251

NCT 273. Echocardiography III. 14.0 Credits. Class-3.0. Clinical-30.0.

Lab-2.0. Work-0.0

This course provides expanded techniques and applications required for a comprehensive echocardiography procedure. Emphasis is placed on interpretation of advanced qualitative and quantitative calculations of various heart diseases with increasing skill development in the clinical setting. Upon completion, students should be able to independently perform a comprehensive diagnostic echocardiography examination with relative quantitative calculations with entry level skill competency.

Prerequisites: Take all: NCT 251 and NCT 253