



**Cardiovascular Technology – Cardiac Sonography, AS**  
 Degree awarded by Harrisburg County Community College (2020-2021  
 Catalog)

Student Name: \_\_\_\_\_

Advisor Name: \_\_\_\_\_

**Developmental Education Courses (if required)**

English Placement		Math Placement			
<input type="checkbox"/>	ACLS025	Academic Reading and Writing Skills I	<input type="checkbox"/>	MATH 020	Pre-Algebra
<input type="checkbox"/>	ACLS026	Academic Reading and Writing Skills II	<input type="checkbox"/>	MATH 022	Elementary Algebra
<input type="checkbox"/>	ACLS050	Introduction to Academic Literacy	<input type="checkbox"/>	MATH 026	Intermediate Algebra
<input type="checkbox"/>	ENGL027	Writing Skills Workshop			

**SEMESTER-BY-SEMESTER PROGRAM MAP FOR FULL-TIME STUDENTS**

**Courses are listed in preferred order of completion**  
*Plans can be modified to fit the needs of part-time students by adding more semesters*  
**Choose your courses with your Success Navigator or Faculty Advisor.**

**Program Entry Requirements - Application, Selection, and Admission of Students**

1. Students must meet the following ELIGIBILITY CRITERIA to be considered for selective admission into HACC's Invasive Cardiovascular Technology or Cardiac Sonography clinical courses. Applicants must:
  - a. Meet with the Cardiovascular Technology Program Director to discuss the academic and clinical requirements of the program and be informed of the selection process for enrollment in the CVT courses. The meeting is mandatory and must be completed by April 15 prior to the intended Fall entry. HACC will verify receipt and evaluation of transcripts by April 15 of the Spring semester prior to the intended Fall entry date.
  - b. Show evidence of completion or course registration in Anatomy & Physiology I and II with a C or better.
  - c. Meet all HACC requirements and deadlines pertaining to application for admission, payments, etc.
  - d. Once accepted into the program, NCC students will be admitted to HACC and be considered HACC students.
  
2. Selection for the program will be determined in the following manner:
  - a. NCC students will be treated as a separate cohort for admission to the program.
  - b. Only students who meet the minimum required score will be eligible for selection.
  - c. The number of native NCC students selected for admission will be limited to the number of clinical partner sites secured by NCC.
  - d. In the event that the number of qualified applicants exceeds the number of clinical slots, HACC program staff will select the most qualified applicants for admission.
  - e. Clinical slots secured by NCC not filled by native NCC applicants may be offered to native HACC students. Likewise, clinical slots secured by HACC not filled by native HACC students may be offered to native NCC students.
  
3. Upon acceptance into the clinical portion of the program, the student will be required to submit the following:
  - a. Full medical assessment including (but not limited to), medical history, and vaccinations or proof of immunity.
  - b. Basic Life Support (BLS) certification for the professional rescuer (approved provider is American Heart Association).
  - c. Proof of current enrollment in a health insurance plan.
  - d. "No records" status for PA Child Abuse Clearance, PA State Police Criminal Record Check and FBI finger print check.
  - e. Agreement to abide by dress code/personal appearance and other policies set forth by the clinical affiliates.
  - f. Proof of a negative drug screen based on clinical affiliation agreements.

Complete	Semester 1 at NCC					
	Course #	Course Title	Credits	Gen Ed	Term/Location Offered (Fall, Winter, Spring, Summer) (Bethlehem, Monroe, Fowler, Online)	Pre-requisites / Co-requisites (PRE / CO)
<input type="checkbox"/>	COLS101	College Success	1		FA, SP, SU; BETH, MROE, DIST	
<input type="checkbox"/>	BIOS204	Human Anatomy and Physiology I	4	Science	FA, SP, SU; BETH, MROE, DIST	One year of HS Biology or BIOS107 or 115
<input type="checkbox"/>	ENGL101	English I	3	Communication	FA, SP, SU; BETH, MROE, DIST	English Placement Policy
<input type="checkbox"/>	MATH120	Nature of Math	3	QL	FA, SP, SU; BETH, MROE, DIST	MATH022 or Math Placement
<input type="checkbox"/>		Arts & Humanities Elective with a Diversity Designation *	3			
	Total Semester Credits:		14			

	Semester 2 at NCC					
	Course #	Course Title	Credits	Gen Ed	Term/Location Offered	Pre-requisites/Co-requisites
<input type="checkbox"/>	BIOS254	Human Anatomy and Physiology II	4	Science	F, SP, SU; BETH, MROE, DIST	BIOS204 with a C or better
<input type="checkbox"/>	ENGL 151 T	English II (Technical Writing)	3	Communication	FA, SP, SU; BETH, MROE, DIST	ENGL 101
<input type="checkbox"/>	CMTH102	Introduction to Communication	3	Communication		
<input type="checkbox"/>		Social and Behavioral Science Elective	3			
		Wellness	1			
	Total Semester Credits		14			
Complete	Semester 3 SPRING AT HACC Lancaster Campus					
	Course #	Course Title	Credits	Gen Ed	Term/Location Offered	Pre-requisites/Co-requisites
<input type="checkbox"/>	CVT 100	Foundations of Cardiovascular Medicine	3			ENGL 003,007 or 057 with a grade of C or higher **
<input type="checkbox"/>	CVT 101	Introduction to Cardiovascular Technology	3			BIOS 111 or 121 and Math 022 or 020 with a grade of C or higher. Co-requisite: CVT 102. Pre or Co-requisite: CVT 100 with a grade of C or higher. This course must be completed within 3 years or less before a student may apply to the clinical components of the programs. **
<input type="checkbox"/>	CVT 102	Cardiovascular Technology Laboratory	1			BIOS 111 or 121, CVT 100 and MATH 022 or 020 with grades of C or higher. Co-requisite: CVT 100 and 101 with grades of C or higher. **
	Total Semester Credits		7			

Complete	Semester 4 SUMMER AT HACC Lancaster Campus					
	Course #	Course Title	Credits	Gen Ed	Term/Location Offered	Pre-requisites/Co-requisites
<input type="checkbox"/>	CVT 103	Cardiovascular Technology Clinical Experience	2			CVT 101 and 102 with grades of C or higher
	Total Semester Credits:		2			
Complete	Semester 5 FALL AT HACC Lancaster Campus					
	Course #	Course Title	Credits	Gen Ed	Term/Location Offered	Pre-requisites/Co-requisites
<input type="checkbox"/>	CVT 221	Cardiac Pathophysiology and Echocardiography Concepts I	4			BIOS 122, CVT 101, 102 & 103 with grades of C or higher. Co-requisite: CVT 222
<input type="checkbox"/>	CVT 222	Cardia Sonography Physics and Instrumentation	3			MATH 111 with a grade of C or higher. Co-requisite: CVT 221
	Total Semester Credits:		7			
Complete	Semester 6 SPRING AT HACC Lancaster Campus					
	Course #	Course Title	Credits	Gen Ed	Term/Location Offered	Pre-requisites/Co-requisites
<input type="checkbox"/>	CVT 219	Introduction to Ultrasound Imaging Systems	1			CVT 221 and 222 with grades of C or higher, Co-requisite: CVT 220 and 223
<input type="checkbox"/>	CVT 220	Introduction to Cardiac Sonography	3			CVT 221 and 222 with grades of C or higher, Co-requisite: CVT 219 and 223
<input type="checkbox"/>	CVT 223	Cardiac Pathophysiology and Echocardiography Concepts II	4			CVT 221 and 222 with grades of C or higher, Co-requisite: CVT 219 and 220
	Total Semester Credits:		8			
Complete	Semester 7 SUMMER II AT HACC Lancaster Campus					
	Course #	Course Title	Credits	Gen Ed	Term/Location Offered	Pre-requisites/Co-requisites
<input type="checkbox"/>	CVT 224	Cardiac Sonography Clinical I	4			CVT 219, 220,222, and 223 with grades of C or higher. Co-requisite: CVT 226
<input type="checkbox"/>	CVT 226	Cardiac Hemodynamics	1			CVT 219, 220,222, and 223 with grades of C or higher. Co-requisite: CVT 224
	Total Semester Credits		5			
Complete	Semester 8 FALL at HACC Lancaster Campus					
	Course #	Course Title	Credits	Gen Ed	Term/Location Offered	Pre-requisites/Co-requisites
<input type="checkbox"/>	CVT 228	Cardiac Sonography Clinical II	5			CVT 224 and 226 with grades of C or higher; Co-requisite: CVT 230
<input type="checkbox"/>	CVT 230	Introduction to Pediatric Echo	2			CVT 224 and 226 with grades of C or higher; Co-requisite: CVT 228
	Total Semester Credits		7			
	Total Degree Credits:		72			

**Notes:**

\*\* Equivalencies

NCCC Course Transfer Equivalencies prior to application		HACC General Education Requirement Invasive Cardiovascular Technology or Cardiac Sonography Program	
ENGL 101 English I	3cr	ENGL 101 English Composition I	3cr
ENGL 151T English II *	3cr	ENGL 102 English Composition II	3cr
CMTH 102 Introduction to Communication	3cr	COMM 101 Effective Speaking <b>or</b>	3cr
Arts & Humanities elective with a "Diversity" designation (See Appendix A)	3cr	Humanities and Arts – Global Awareness Elective	3cr
Social and Behavioral Science Core	3cr	Social and Behavioral Science Elective	3cr
BIOS 204 Human Anatomy & Physiology I	4cr	BIOL 121 Anatomy & Physiology I	4cr
BIOS 254 Human Anatomy & Physiology II	4cr	BIOL 122 Anatomy & Physiology II	4cr
PE/Health/Wellness	cr	Wellness Elective	1cr
MATH 120 Nature of Mathematics	3cr	MATH 111 Principles of Mathematics	3cr
COLS 101 College Success	1cr	First-Year Seminar	1cr

**Program Narrative:**

Our program prepares you to enter the workforce as a diagnostic cardiac sonographer. Diagnostic cardiac sonographers use high frequency sound waves to produce, record and evaluate ultrasound images of the heart, great vessels and surrounding anatomy. Today's cardiac sonographers must be proficient in different ultrasound modalities, including M-mode, two-dimensional, Doppler and color Doppler imaging. Emerging technologies in the field are 3-D, 3-D transesophageal echocardiography and strain rate imaging. From our highly trained professors, you will learn these skills and more.

Our program is selective, which means that you must meet special entry requirements that go beyond your standard admission criteria for HACC. Before starting the clinical portion of the program, you must complete the following items at your own expense:

- Pennsylvania Child Abuse History Clearance, State Police Criminal Record Check and FBI background check
- Physical examination and immunizations
- Drug and alcohol screens
- CPR certification

### **Program Features:**

#### **What degree will I earn? Will I be eligible for credentials?**

Upon successful completion you:

- will earn a Cardiovascular Technology – Cardiac Sonography Associate in Science Degree
- are eligible to sit for these exams:
  - Registered Diagnostic Cardiac Sonographer (RDCS) through the American Registry for Diagnostic Medical Sonography (ARDMS)
  - Registered Cardiac Sonographer (RCS) through Cardiovascular Credentialing International (CCI)

#### **What are the required courses and what is the suggested schedule? How long does the program take to complete? Where are the clinical classes held?**

- Download a list of Required Courses. The list of required courses includes a sample schedule (pdf)
- HACC holds CVT classes at the Lancaster campus. Prerequisite courses are offered at other campuses and sites.
- We prepare students during the first two semesters on campus to enter a clinical assignment with the ability to perform a complete echocardiogram:
  - image acquisition, measuring appropriate images (2D, M-Mode and Doppler)
  - completion of the technologist impression/preliminary report for the physician based on images acquired during the examination.
- Students should be prepared to attend clinical 32-40 hours each week during the assigned clinical rotation from January through August (the final two semesters of the clinical program).
- HACC assigns clinical rotations within 90 miles of the Lancaster campus. Several hospitals in the Lancaster, York, Harrisburg and Philadelphia areas are affiliated with the program.
- You need your own transportation to attend clinical and field trips.

#### **What are the program clinical admission criteria and how do I apply for clinical?**

- Admission to HACC does not guarantee admission to the clinical component of the program. Work closely with your advisor to prepare to apply to the clinical/core component.
- Download the Admission Criteria and Essential Qualifications (pdf).
- Meet with a health career advisor.
- Complete the clinical application (online using Survey Monkey). The application is available online using Survey Monkey.

#### **Can I advance my education in this field?**

- This program leads directly to an occupation.
- Students can pursue a Bachelor of Science degree in a health related field in order to transition into a management, education or industry position:
  - Franklin University offers a BS in Allied Healthcare Management
  - Shippensburg University offers a BS in Healthcare Administration
  - Immaculata University offers an accelerated BA in Health Care Management. They offer classes in accelerated format at HACC's Lancaster Campus

**What is the most current (2015-2017) program effectiveness data?**

- program completion rate —77%
- Program performance on national board exam —92%
- Job placement —84%

The CVT program is accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP)  
25400 U.S. Highway 19 North, Suite 158  
Clearwater, FL 33763  
727-210-2350

**Who can I contact for more information?**

Please contact an Admissions Counselor, by phone at 800-ABC-HACC, or by email at start@hacc.edu

**Cardiac Sonography Program Office:**

HACC Lancaster Campus  
East Building, Room 207  
1641 Old Philadelphia Pike  
Lancaster, PA 17602  
717-358-2837

**Program Outcomes:**

At the completion of the program, you will be able to:

- Prepare competent entry-level cardiovascular technologists in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains for adult echocardiography
- Be knowledgeable in anatomy, pathology, physiology and technical methods required for entry-level cardiac sonographers
- Possess problem-solving, critical thinking, and analytical abilities
- Possess the professional and ethical characteristics of a healthcare provider
- Possess effective communication skills
- Demonstrate an understanding of the importance of professional growth, continuing education and professional certification
- Possess the knowledge and skills required of an entry-level adult cardiac sonographer

**Career Information:**

When you receive your Associate in Science (AS) in Cardiovascular Technology – Sonography, you will be ready to enter the healthcare field as a cardiac sonographer and able to work in health care facilities, physician practices and other specialized facilities.

**What Diagnostic Medical Sonographers and Cardiovascular Technologists and Technicians, Including Vascular Technologists Do**

Diagnostic medical sonographers and cardiovascular technologists and technicians, including vascular technologists, also called *diagnostic imaging workers*, operate special imaging equipment to create images or to conduct tests. The images and test results help physicians assess and diagnose medical conditions.

**Work Environment**

Most diagnostic medical sonographers and cardiovascular technologists and technicians, including vascular technologists, work full time. Most diagnostic imaging workers were employed in hospitals in 2016, while most of the rest worked in physicians' offices or medical and diagnostic laboratories.

**How to Become a Diagnostic Medical Sonographer or Cardiovascular Technologist or Technician, Including Vascular Technologist**

Diagnostic medical sonographers and cardiovascular technologists and technicians, including vascular technologists, need formal education, such as an associate's degree or a postsecondary certificate. Many employers also require professional certification.

**Pay**

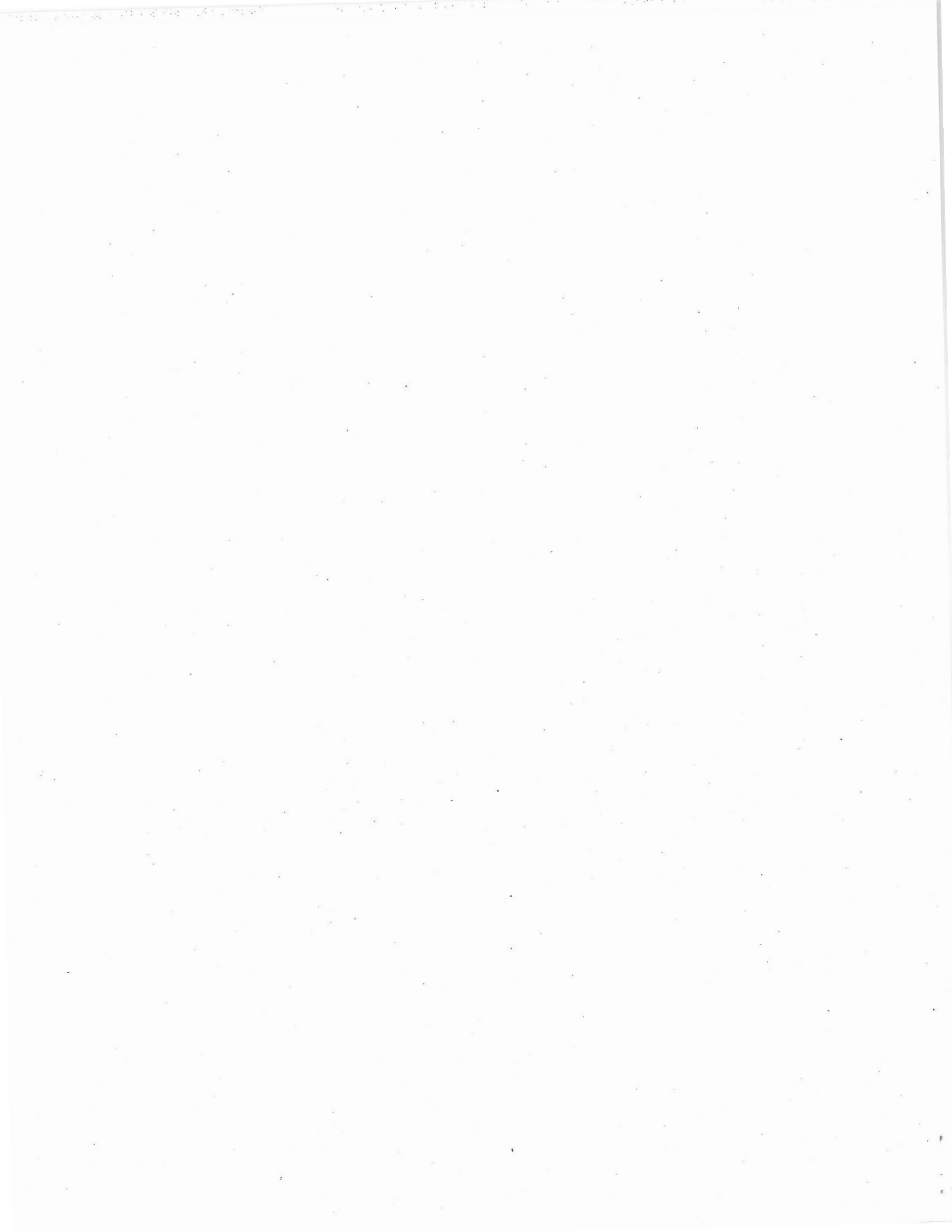
The median annual wage for cardiovascular technologists and technicians was \$56,850 in May 2018.

The median annual wage for diagnostic medical sonographers was \$72,510 in May 2018.

**Job Outlook**

Overall employment of diagnostic medical sonographers and cardiovascular technologists and technicians is projected to grow 17 percent from 2016 to 2026, much faster than the average for all occupations. As the large baby-boom population ages, the need to diagnose medical conditions—such as blood clots and heart disease—will likely increase. Imaging technology is a tool used in making these diagnoses.

For more information, visit the US Department of Labor website at: <https://www.bls.gov/ooh/healthcare/print/diagnostic-medical-sonographers.htm>





## Appendix A

Highlighted courses below carry the “Diversity” designation and could count for the HACC Global Awareness competency.

### Arts and Humanities (AH)

<u>CMTH126</u>	The Communication Arts
<u>CMTH211G</u>	Plays: Classical to Contemporary
<u>DANC101</u>	Dance History
<u>ENGL205G</u>	American Literature I
<u>ENGL211G</u>	Plays: Classical to Contemporary
<u>ENGL215G</u>	Multicultural Adolescent Literature
<u>ENGL250G</u>	Latin American Literature
<u>ENGL251G</u>	British Literature II
<u>ENGL253</u>	Creative Writing
<u>ENGL255G</u>	American Literature II
<u>ENGL256G</u>	Modern Poetry
<u>ENGL257G</u>	20th Century Literature by Women
<u>ENGL260G</u>	Contemporary Literature
<u>ENGL264G</u>	Irish Literature
<u>ENGL265G</u>	African-American Literature
<u>ENGL267</u>	Poetry Writing
<u>HUMA121</u>	American Work Experience
<u>HUMA140</u>	Introduction to Women and Gender Studies
<u>HUMA150</u>	Nature of the Environment
<u>HUMA210</u>	Creativity and the Origin of Ideas
<u>MDLA102</u>	Elementary French I
<u>MDLA103</u>	Elementary Spanish I
<u>MDLA105</u>	Elementary Chinese I
<u>MDLA107</u>	Elementary Arabic I
<u>MDLA112</u>	Elementary French II
<u>MDLA113</u>	Elementary Spanish II

<u>MDLA115</u>	Elementary Chinese II
<u>MDLA117</u>	Elementary Arabic II
<u>MDLA122</u>	Intermediate French I
<u>MDLA123</u>	Intermediate Spanish I
<u>MDLA125</u>	Intermediate Chinese I
<u>MDLA133</u>	Intermediate Spanish II
<u>MDLA135</u>	Intermediate Chinese II
<u>PHIL111</u>	On Death and Dying
<u>PHIL121</u>	World Religions
<u>PHIL204</u>	Asian Philosophies