

SECTION III:

**Cardiovascular Technology Program
Student Handbook**

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The Faculty

Scott W.M. Wells BS, RDCS, RVT

Office: (864) 941-8717

Cardiovascular Technology Program Director

Email: wells.s@ptc.edu

Adult Echocardiography Instructor

Cody Johnson

Invasive Clinical Coordinator/Instructor

Email: johnson.c2@ptc.edu

Lisa Turman

Invasive Clinical Coordinator/Instructor

Email: turman.l@ptc.edu

Jacob Childress

Invasive Clinical Coordinator/Instructor

Email: childress.j1@ptc.edu

Message from the CVT Program Director

Section III Cardiovascular Technology Program Student Handbook is in addition to the first two sections of the Health Care Division Handbook. It is provided to current and tracking Invasive, Adult Echocardiography and Vascular Sonography students at Piedmont Technical College. It is to be used in conjunction with the Piedmont Technical College Health Care Division Student Handbook. It is designed to answer any purpose, policy and procedural questions that might arise during the course of enrollment in the CVT program.

Message from the CVT Faculty

The CVT faculty is committed to the philosophy of Piedmont Technical College with special emphasis on student-centered learning, and to the premise that Cardiovascular Technology is a “profession” and those who enter clinical practice are accountable for their actions and continued professional growth. Teaching strategies are designed to promote critical thinking, an attitude of inquiry, personal responsibility, a commitment to keep pace with the evolution of the scope of practice, and sharing professional knowledge

Program History

In the Fall of 2005, Lena Warren, Dean of Health Science and Jerry A. Alewine, Director of Clinical Education for the Respiratory Program at Piedmont Technical College conducted a community survey to explore the need for a cardiovascular program. Initial input was sought from Kendra Kenney who serves as the Director of Cardiovascular Services at Self Regional Healthcare in Greenwood, South Carolina. A pro-forma assessment was conducted throughout the seven counties served by Piedmont Technical College and the state of South Carolina. Contact was made to most all hospitals offering cardiovascular services to include those with catherization labs in the state. During this preliminary phase it was determined that a significant need for trained cardiovascular technologist (CVT) both in the invasive and non-invasive discipline existed.

An assessment of the offerings for CVT training was viewed as minimal with most CVT's trained on-the-job. The vast majority of CVT's were being recruited from the disciplines of respiratory care practitioners and radiological technologists. At the time the University of South Carolina in cooperation with the Sisters of Charity – Providence Heart Center offered an 18-month certificate training program for non-invasive and vascular track students. This program admitted up to six students per admitting class thus leaving a tremendous gap in the number of professionals seeking additional education or training. Recognizing this need, Eric J. Walker, Director of the School of Cardiovascular Diagnostics at USC offered his full support for the creation of an additional CVT program at the associate degree level. In a letter dated January 16, 2006, Walker confirmed this support to the Honorable John E. Courson, South Carolina State Senator for District 20. With a completion of needs assessment for the program and support from the USC School of Cardiovascular Diagnostics approval was sought and secured for a new program from the Piedmont Technical College Area Commissioners, the governing board of the college.

The initial design of the program curriculum was based upon a similar program at Central Piedmont Technical College in Charlotte, North Carolina. With the submission of a model for the program, Piedmont Technical College was given approval by the South Carolina Technical College System and the South Carolina Commission on Higher Education to proceed with program implementation in the Spring of 2007. Initial funding for the program was secured through a grant from a Duke Endowment grant provided through the offerings of Self Regional Healthcare. Additional funds were provided through the South Carolina Technical System and incorporated into the budget for Piedmont Technical College. Piedmont Technical College received additional funding from the community and in particular from Piedmont Cardiology Associates.

Through the grant from the Duke Endowment, Self Regional Healthcare bought the building at 345 North Emerald Road, Greenwood, that would eventually house the Cardiovascular Program. The building was leased to Piedmont Technical College for a period of 3 years. At the completion of the three-year period the space reverted to Piedmont Technical College free and clear. Upon completion of the fund raising program, construction to renovate the building began in July of 2008. The facility contains 4500 square foot space that was subdivided into a simulated catherization lab, classrooms,

an echocardiology lab, and faculty offices and student space. The facility was ready for occupancy in December of 2008.

In December of 2008, Cindy B. Evans BS,RRT,RCP,RCS,RPsgT was hired as the principle program director. In addition to Ms. Evans, Dr. Sue George, PhD was hired as a consult to the program to assist with program development. As program personnel Dr. Mihai Croitoru accepted the initial role of Non-Invasive Medical Director, and Dr. Paul Kim accepted the role of Invasive Medical Director in the summer of 2009, respectfully. Dr. Paul Kim has continued the role of Medical Director now for both cardiovascular tracks.

The first class for the CVT program were admitted and began class on January 20th 2009.

In 2010, Christy C. Nichols BHS,RT,(R),(CT) was hired as the invasive cardiovascular technology instructor and clinical coordinator role. Ms. Nichols had extensive experience with the invasive cardiology and 4 years of teaching experience on community college level.

Early on the non-invasive program lost Cindy Evans who was replaced by Rodney Rutherford. Rodney Rutherford along with Christy Nichols submitted the Initial Program Accreditation Self-Study and received the programs received initial program accreditation status on July 18, 2013. Shortly after Rodney Rutherford resigned and Laura Rawlings took his place. Laura Rawlings stayed until 2015.

In 2015, Laura T. Boone B.S.DMS, RDCS, RVT, RDMS, RT(R) was hired for the non-invasive cardiovascular instructor. At the time of hire she brought eight years of ultrasound experience, clinical preceptorship experience, and part-time clinical instructor experience at the college level, and multiple credentials in the non-invasive field to the program. The two instructors/clinical coordinators served as Program Directors for their respective programs.

Several changes have occurred in the last five years. In 2017, the two program directors submitted a curriculum changes through the PTC Curriculum Committee at the college level, the South Carolina Technical College System, and the JRC-CVT for consideration. All of the curriculum changes were accepted by all parties and an implementation date of January 2019 was determined. The significant changes included: a program name change from Non-Invasive to Adult Echocardiography and a decrease in the number of semesters needed to complete the program. The decrease is from 5 semesters to 4 semesters. The clinical hours were not decreased, but condensed throughout the four semesters.

In 2018, the CVT program applied for Continuing Accreditation status by CAAHEP and it was granted by the recommendation of the JRC-CVT.

In 2019, a proposal for a Vascular Sonography Certificate was approved for the for the 2020-2021 Academic Year.

In January 2020, Lena Y. Scott M.B.A HCA, B.S. RS, RCIS was hired as the Program Instructor & Clinical Coordinator for the Invasive Cardiology program to replace Christy Nichols who resigned from the college.

In January 2021, the first cohort of the Vascular Sonography Certificate was enrolled with one student graduating in August of 2021.

Multiple curriculum changes were submitted in 2021 which went into effect in fall term 2022.

In Fall of 2022, Cody Johnson began as an adjunct for the invasive program. In October 2022, Lena Scott resigned from her full-time position and continued as an adjunct faculty member.

In April of 2023 Laura Boone resigned and Scott Wells was hired as the program director and instructor for non-invasive CVT students. Lisa Turman was hired in the summer and began as an adjunct for the invasive program.

Advisory Board Committee

The Cardiovascular Technology Program Advisory Committee is defined as a formalized group of individuals not associated with the college but who are representatives and knowledgeable of the present and anticipated performance conditions and requirements of cardiovascular technology within the college's service area. The Advisory Committee members represent the communities of interest that are served by the program and must include, but are not limited to, students, graduates, faculty, sponsor administration, employers, physicians, and the public. This group is to be constituted and operated so that the combined judgments and experience of the members will influence the curriculum structure and instructional methods, formulate and periodically revise appropriate goals and learning domains, monitor needs and expectations, and ensure program responsiveness to change. The advisory committee will meet annually at a minimum.

Program Mission

The Cardiovascular Technology Department will provide competency-based education that links theoretical, professional, and ethical concepts in order to prepare graduates for clinical practice and life-long learning.

Program Goals and Minimum Expectations

- Prepare competent entry-level cardiovascular technologists in the cognitive, psychomotor, and affective learning domains to enter the Adult Cardiac Sonography or Invasive Cardiovascular

Admission into the CVT Program

Applicants who wish to qualify for admission into the Invasive and Adult Echocardiography Program must meet PTC general college requirements and the specific admission requirements for the CVT program of choice as stated in the PTC Academic Catalog and the Health Care Division Handbook. The [Program Fact Sheet](#) summarizes the requirements and the [Program Application Worksheet](#) is used to calculate each applicants score. The top eight students applying to the invasive track and the top twelve students applying to the Adult Echo track will be accepted. In the event of a tie, the student with the earliest priority date will be selected.

Requirements to Progress and Successfully Complete the Program

Students in any program must meet the following requirements to progress in their program ultimately leading to graduation from the college. The requirements for progression in the programs, included by are not limited to:

1. A grade of "B" or better in all required courses. This is necessary to provide minimally safe practitioners;
2. Attempts at another college will be considered;
3. A GPA of 2.0 is required to graduate from any Health Care Division program;
4. Up-to-date medical records (Please see Health Assessment Form Section);
5. Current BLS Provider CPR completion card;
6. Documentation of yearly Hospital Orientation through Care Learning;
7. Students must have clear background check and drug screening
 - a. **Reporting Criminal Offenses** - Students must notify the school Program Director/Instructor if they had an arrest and/or criminal charge or conviction filed subsequent to completion of the criminal background check. The school further agrees to notify the clinical facility as soon as possible, but not later than seven calendar days of such charges or convictions. Failure to do so may result in the participant's dismissal from the clinical rotation. Failure of the school to notify the clinical facility of any arrest(s), criminal charge(s), or conviction(s) within seven calendar days may result in the immediate termination of the clinical affiliation agreement.
8. Students must be able to demonstrate mastery of competencies (or a basic skill set) necessary for clinical placement).
 - a. **Mastery of Competency**
 - i. In each course with a lab or clinical component in which skills are verified through timed skills checkoffs the student can only score less than 75% on one (1) of the checkoffs on the first attempt and must then successfully pass (with a 75% or greater) on any repeated checkoff within 1 additional attempt. The additional attempt will begin with a 10-point deduction (ie. Second attempt begins with a 90%). In the event the

student is unable to successfully complete either of these requirements, they will be required to withdraw from the course (if prior to the last date to withdraw) or receive an F for the course and will not be allowed to take any future class tests. Any missed checkoffs (due to a tardy or absence) on the originally scheduled date will result in a 0 for that skill. There will be no make-ups for that skill.

- ii. Skills check off sheets are used as a study tool for students as they practice however, to demonstrate competency during the graded check off skills these sheets should not be used by the student. During the skills check off the student should not have the skills check off sheet in view and should only have approved/needed supplies for skill. If a skills checkoff sheet is visible during a graded checkoff a 0 will be recorded for that skill.
- iii. Incomplete work for the semester will result in an incomplete which becomes a failure if not successfully made up prior to the "incomplete to convert to F date" as listed in the PTC Student Handbook/Calendar, which is 30 school days. The Clinical Instructor may choose to award students an Incomplete or an "F" depending on if 80% of the requirements for clinical performance are met. For example: if you try to get all of your grades at the end of the semester and do not complete, you may be awarded an "I" instead of an "F". Students may not receive more than two incompletes in one program. This means that students are allowed one incomplete during the freshman year and one incomplete during the senior year. For example: a second incomplete during the freshman year may result in clinical failure or a second incomplete during the senior year may result in clinical failure.

Cardiovascular Technology Program Student Learning Outcomes

Invasive Cardiovascular Technology

- Demonstrate the work ethic skills needed for employment in the field of Invasive Cardiovascular Technology.
- Apply knowledge of cardiac anatomy, physiology, and pathophysiology with emphasis to the cardiac catheterization procedure and assessment.
- Interpret other cardiac catheterization methods.
- Apply knowledge of hemodynamics through mathematical calculations and electronics and medical instrumentation.
- Apply a working knowledge of radiation imaging production, radiation science, radiation biology, and radiation safety as it relates to patient and occupational exposure. ALARA-As Low As Reasonably Achievable.
- Demonstrate hands on skill proficiency in cardiac catheterization procedure preparation and facilitation.

Adult Echocardiography

- Apply knowledge of cardiac anatomy, physiology, and pathophysiology to assess and analyze the heart through cardiac sonography.
- Recognize the physical sonographic principles and apply knowledge of the physical sonographic principles and instrumentation during cardiac ultrasound.
- Demonstrate hands-on skill proficiency and good clinical decision making to obtain quality echocardiograms that document cardiac pathology adequately.
- Interpret other cardiac diagnostic methods at a basic level.
- Demonstrate the work ethic skills needed for employment in the field of Cardiovascular Technology.

Vascular Sonography

- Apply knowledge of vascular anatomy, physiology/hemodynamics, and pathophysiology to assess and analyze the vascular system with sonography.
- Demonstrate hands-on skill proficiency and good clinical decision making to obtain quality vascular exams that document pathology adequately.
- Interpret vascular studies and provide an oral and written summary of findings.
- Explain miscellaneous vascular testing methods and recognize abnormalities.
- State effective procedures for continuing sonographic education after graduation and throughout the sonography career.

Associate in Applied Science

Cardiovascular Technology - Invasive (CVTI)

**Total
Credit Hours:** 68
Effective: FALL 2022

Graduation Plan

First Semester Program-Ready Courses				
Course	Course Description	Prerequisites/Corequisites	Semester(s)	Credit Hours
AHS 102	Medical Terminology	RDG 100	FA SP SU	3
BIO 210	Anatomy and Physiology I	ENG 100, RDG 100, MAT 032/012	FA SP SU	4
ENG 101	English Composition I	ENG 100, RDG 100	FA SP SU	3
MAT 102	Intermediate Algebra (or MAT 120)	MAT 152 or 101 (min grade C)	FA SP SU	3
PSY 201	General Psychology	ENG 100, RDG 100	FA SP SU	3
TOTAL				16

Second Semester Program-Ready Courses				
Course	Course Description	Prerequisites/Corequisites	Semester(s)	Credit Hours
BIO 211	Anatomy and Physiology II	BIO 210 (min grade C)	FA SP SU	4
SPC 205	Public Speaking	ENG 101 or 165	FA SP SU	3
	Humanities/Fine Arts	May vary by course.	FA SP SU	3
TOTAL				10

Enrollment in Cardiovascular Technology coursework requires admission to the program. Program-Ready Applications are accepted in May. For more information, see program fact sheet.

Fall Semester				
Course	Course Description	Prerequisites/Corequisites	Semester(s)	Credit Hours
CVT 101	Intro to Cardiovascular Technology	Prereq: Adm. to Prog. And BIO 211 Coreq: CVT 112 and 115	SP	2
CVT 112	Cardiovascular Principles	Prereq: Adm. to Prog. Coreq: CVT 101 and 115	SP	3

CVT 117	Invasive Fundamentals (2/6)	Prereq: Adm. to Prog. Coreq: CVT 101 and 112	FA	3
<i>BIO 211 must be completed by the end of this semester.</i>			TOTAL	8

Spring Semester				
<i>Course</i>	<i>Course Description</i>	<i>Prerequisites/Corequisites</i>	<i>Semester(s)</i>	<i>Credit Hours</i>
CVT 108	Physics for Invasive Cardiovascular Tech	Prereq: CVT 101, 112, and 115 Coreq: CVT 120 and 122	SU	2
CVT 120	Invasive Cardiology I	Prereq: CVT 101,112,115,and BIO 211 Coreq: CVT 108 and 122	SU	3
CVT 122	Invasive Cardiology Clinical I	Prereq: CVT 101, 112, and 115 Coreq: CVT 108 and 120	SU	5
<i>SPC 205 must be completed by the end of this semester.</i>			TOTAL	10

Summer Semester				
<i>Course</i>	<i>Course Description</i>	<i>Prerequisites/Corequisites</i>	<i>Semester(s)</i>	<i>Credit Hours</i>
CVT 110	Hemodynamics and Cardiac Physiology	Prereq: CVT 108, 120, and 122 Coreq: CVT 121 and 125	FA	3
CVT 121	Invasive Cardiology II	Prereq: CVT 108, 120, 122, & SPC 205 Coreq: CVT 110 and 125	FA	3
CVT 125	Invasive Cardiology Clinical II-Applications	Prereq: CVT 108, 120, and 122 Coreq: CVT 110 and 121	FA	5
			TOTAL	11

Fall Semester				
<i>Course</i>	<i>Course Description</i>	<i>Prerequisites/Corequisites</i>	<i>Semester(s)</i>	<i>Credit Hours</i>
CVT 223	Invasive Cardiology III	Prereq: CVT 110, 121, and 125 Coreq: CVT 225, 226	SP	3
CVT 225	Invasive Cardiology Clinical III	Prereq: CVT 110, 121, 125 Coreq: CVT 223, 226	SP	8
CVT 226	Invasive Cardiology Special Topics	Prereq: CVT 110, 121, and 125 Coreq: CVT 223, 225	SP	2
			TOTAL	13

NOTE: Course offerings may vary by semester and year. Please consult DegreeWorks and the course search feature when determining if the desired course is being offered in the current semester.

Associate in Applied Science

Cardiovascular Technology - Adult Echocardiography (CVTN)

Total
Credit 69
Hours:
Effective: Fall
2022

Graduation Plan

First Semester Program-Ready Courses				
Course	Course Description	Prerequisites/Corequisites	Semester(s)	Credit Hours
AHS 102	Medical Terminology	RDG 100	FA SP SU	3
BIO 210	Anatomy and Physiology I	ENG 100, RDG 100, MAT 032/012	FA SP SU	4
ENG 101	English Composition I	ENG 100, RDG 100	FA SP SU	3
MAT 102	Intermediate Algebra	MAT 152 (min grade C)	FA SP SU	3
PSY 201	General Psychology	ENG 100, RDG 100	FA SP SU	3
TOTAL				16

Second Semester Program-Ready Courses				
Course	Course Description	Prerequisites/Corequisites	Semester(s)	Credit Hours
BIO 211	Anatomy and Physiology II	BIO 210 (min grade C)	FA SP SU	4
SPC 205	Public Speaking	ENG 101 or 165	FA SP SU	3
	Humanities/Fine Arts	May vary by course.	FA SP SU	3
TOTAL				10

**Enrollment in Cardiovascular Technology coursework requires admission to the program.
Program-Ready Applications are accepted in September.
For more information, see program fact sheet at <http://www.ptc.edu/factsheets>.**

Fall Semester				
Course	Course Description	Prerequisites/Corequisites	Semester(s)	Credit Hours
CVT 101	Intro to Cardiovascular Technology	Prereq: Adm. to Prog. And BIO 211 Coreq: CVT 112 and 115	FA	2
CVT 112	Cardiovascular Principles	Prereq: Adm. to Prog. Coreq: CVT 101 and 115	FA	3

CVT 115	Echocardiography Fundamentals (2/6)	Prereq: Adm. to Prog. Coreq: CVT 101 and 112	FA	3
TOTAL				8

Spring Semester				
<i>Course</i>	<i>Course Description</i>	<i>Prerequisites/Corequisites</i>	<i>Semester(s)</i>	<i>Credit Hours</i>
CVT 106	Introduction to Non-Invasive Physics	Prereq: CVT 101, 112, and 115 Coreq: CVT 140 and 142	SP	3
CVT 140	Non-Invasive Cardiology I	Prereq: CVT 101, 112, and 115 Coreq: CVT 106 and 142	SP	3
CVT 142	Non-Invasive Cardiology Clinical I	Prereq: CVT 101, 112, and 115 Coreq: CVT 106 and 140	SP	5
TOTAL				11

Summer Semester				
<i>Course</i>	<i>Course Description</i>	<i>Prerequisites/Corequisites</i>	<i>Semester(s)</i>	<i>Credit Hours</i>
CVT 107	Non-Invasive Cardiovascular Physics	Prereq: CVT 106, 140, and 142 Coreq: CVT 141 and 144	SU	3
CVT 141	Non-Invasive Cardiology II	Prereq: CVT 106, 140, 142, & SPC 205 Coreq: CVT 107 and 141	SU	3
CVT 145	Non-Invasive Cardiology Clinical II-Applications	Prereq: CVT 106, 140, and 142 Coreq: CVT 107 and 141	SU	5
TOTAL				11

Fall Semester				
<i>Course</i>	<i>Course Description</i>	<i>Prerequisites/Corequisites</i>	<i>Semester(s)</i>	<i>Credit Hours</i>
CVT 243	Non-Invasive Cardiology III	Prereq: CVT 107, 141, and 145 Coreq: CVT 245 and 246	FA	3
CVT 246	Non-Invasive Cardiology Special Topics	Prereq: CVT 107, 141, 145 Coreq: CVT 243 and 245	FA	2
CVT 245	Non-Invasive Cardiology Clinical III	Prereq: CVT 107, 141, and 145 Coreq: CVT 243 and 246	FA	8
TOTAL				13

NOTE: Course offerings may vary by semester and year. Please consult DegreeWorks and the course search feature when determining if the desired course is being offered in the current semester.

Certificate in Vascular Sonography

Cardiovascular Technology – Vascular Sonography (CVT7)

**Total
Credit Hours: 16**
**Effective: Spring
2021**

Graduation Plan

Spring Semester				
<i>Course</i>	<i>Course Description</i>	<i>Prerequisites/Corequisites</i>	<i>Semester(s)</i>	<i>Credit Hours</i>
CVT 130	Vascular Sonography I	Prereq: Credentialed Sonographer Coreq: CVT 131	SP	3
CVT 131	Vascular Sonography Clinical I	Prereq: Credentialed Sonographer Coreq: CVT 130	SP	6
TOTAL				9

Summer Semester				
<i>Course</i>	<i>Course Description</i>	<i>Prerequisites/Corequisites</i>	<i>Semester(s)</i>	<i>Credit Hours</i>
CVT 132	Vascular Sonography II	Prereq: CVT 130, 131 Coreq: CVT 133	SU	3
CVT 133	Vascular Sonography Clinical II	Prereq: CVT 130, 131 Coreq: CVT 133	SU	4
TOTAL				7

NOTE: Course offerings may vary by semester and year. Please consult DegreeWorks and the course search feature when determining if the desired course is being offered in the current semester.

Invasive CVT

Approximate Fee Schedule (Subject to Change)

CVT	101	HSME	\$20.00	CVT Club
CVT	115	HSAF	\$160.50	Trajecsys Clinical Reporting
CVT	122	LABF	\$20.00	Lab Supplies
		HBAD	\$35.00	Radiation Badge
CVT	223	HSPI	\$25.00	Pinning
		HSTF	\$50.00	CCI Practice Exam
CVT	226	HSTF	\$365.00	CCI RCIS Exam

Adult Echocardiography

Approximate Fee Schedule (Subject to Change)

CVT	101	HSME	\$20.00	CVT Club
CVT	115	HSAF	\$160.50	Trajecsys Clinical Reporting
CVT	107	HSTF	\$225.00	ARDMS SPI Exam
CVT	142	LABF	\$20.00	Lab Supplies
		HBAD	\$35.00	Radiation Badge
CVT	243	HSPI	\$25.00	Pinning
		HSAF	\$100.00	Registry Review
CVT	246	HSTF	\$250.00	ARDMS RDCS Exam

Vascular Sonography

Approximate Fee Schedule (Subject to Change)

CVT	131	HSAF	\$107.00	Trajecsys
		LABF	\$20.00	Lab Supplies
CVT	132	HSAF	\$100.00	Registry Review
CVT	246	HSTF	\$250.00	ARDMS RVT Exam

Other Fees Estimated

Tuition	See the college Academic Catalog (changes by residency)
Books	Book prices vary and are subject to count
Graduation cap & gown	Approximately \$50.00
CPR mask/supplies/book	\$99.00 through Continuing Education
Background check/drug screen/medical document manager (CastleBranch)	Approximately \$122.75
Uniforms/shoes	Varies depending on brand and style Budget up to \$300
Physical exam/Immunizations	Dependent on provider
Gas for vehicle	Dependent on amount of travel
mCE, ACEMAPP	Dependent on Clinical Site Rotation

CLINICAL PLAN OF EDUCATION

An emphasis of the cardiovascular technologist's time is spent on performance of diagnostic cardiology examinations. In order that this is accomplished in an efficient and effective manner, the student must be thoroughly competent in cardiovascular procedures.

Students will rotate through clinical facilities to gain experience and competence in cardiovascular procedures. Currently the Cardiovascular Technology Program has clinical affiliation agreements with the following facilities which are subject to change at any time. Also, facilities may elect not to accept a student any given semester.

Input is provided by the students to the clinical coordinator on what sites they are most interested in and the justification for those choices. The clinical coordinator will take the student's input into consideration when choosing sites that will assist them in meeting their clinical objectives.

Facility	Invasive	Adult Echo	Vascular Sono
Aiken Regional Medical Center	√	√	
AnMed Health	√	√	√
Augusta University Adult & Pediatrics		√	
Cardiovascular Imaging of Aiken		√	
Doctor's Hospital	√	√	
Bon Secours St. Francis Downtown Gvl	√	√	
Lexington Medical Center including Heart and Vascular Office	√	√	√
Medical University of South Carolina (Providence and Charleston Locations)	√	√ Charleston Only	
Newberry County Memorial Hospital		√	
Prisma Health (Midlands, Upstate, and Laurens Locations)	√	√ Laurens Only	
Roper St. Francis, Charleston	√		
Self Regional Healthcare	√	√	√
Spartanburg Regional Health System	√	√	√
St. Mary's Athens, GA and Lavonia, GA		√	√
The Regional Medical Center of Orangeburg & Calhoun Counties	√	√	

Clinical Travel

Due to the fact that experiential sites are throughout South Carolina and northeast Georgia, there is no guarantee that placement will be at a facility close to each student's home. Prior arrangements should be made by the student to ensure reliable transportation to and from experiential sites throughout the course of this program.

Policy regarding students being paid during clinical

The JRC-CVT does not recommend that students receive financial compensation during their clinical hours. However, the JRC-CVT does not feel that financial compensation is prohibited by Standard V.C. It is the responsibility of the program to document in written form how each student who is financially compensated during clinical hours is able to achieve the clinical course learning objectives and is able to participate in unscheduled learning opportunities (e.g., to observe or participate in an unusual or educationally important clinical case). The program is also required to document that each student who is performing compensated work is working under the direct supervision of an appropriately credentialed technologist.

Each student must be clearly identified as a student during all clinical hours even if being financially compensated. Students are required to wear identification that clearly shows the name of the program, the name of the student, and the status of student.

Registry Credentialing Agencies

Following the successful completion of the Cardiovascular Technology program graduates seek credentialing from either of the following:

Cardiovascular Credentialing International www.cci-online.org

Credentialing exams offered:

- Registered Cardiac Invasive Specialists (RCIS) – Invasive Program
- Registered Cardiac Sonographer (RCS) – Adult Echo Program

American Registry in Diagnostic Medical Sonography (ARDMS) www.ardms.org/

Credentialing exams offered:

- Registered Diagnostic Cardiac Sonographer (RDCS) – Adult Echo Program
- Registered Diagnostic Vascular Technologist (RVT) – Vascular Sono Program

To earn the RDCS and/or RVT credentials, you must pass the Sonography Principles & Instrumentation (SPI) examination and the corresponding specialty examination (Adult Echocardiography or Vascular Technology) within a five-year period. Adult Echocardiography students will be eligible to take the SPI exam following successful completion of both Non-Invasive Physics courses. The Adult Echocardiography students will be eligible to take the Adult Echocardiography (AE) Specialty Exam up to 60 days prior to graduation. Passing the SPI exam and the AE Specialty Exam will result in earning the RDCS credential at the time of graduation.

For current policies, regarding the registry process, refer to the credentialing website. Of note, the ARDMS will only recognize a student's application under prerequisite 2 for one-year post-graduation so the graduate must pass the registry exam within one year or apply under a different prerequisite.

The Definition of the Cardiovascular Profession

A Cardiovascular Technologist is a health care professional who, at the direction of a licensed physician, performs diagnostic tests that are used in the diagnosis, treatment, and serial follow-up of patients with cardiovascular disease. Cardiovascular Technology is a title used to describe basic areas of expertise: Invasive Cardiology and Adult Echocardiography. The role of the Cardiovascular Technologist includes, but is not limited to one of the following:

Invasive Cardiovascular Technology

- Assisting the physician in the performance of diagnostic and interventional cardiac catheterization and angiography procedures, and measuring cardiovascular parameters such as cardiac output, blood flow velocity, cardiovascular dynamics, cardiac electrophysiology parameters, intracardiac shunt detection, and valve flow/valve area determinations.
- Preparing, calibrating and operating medical instrumentation utilized in the cardiac catheterization laboratory, open-heart surgical suite and cardiac research facilities.

Adult Echocardiography & Vascular Sonography

- Patient information assessment, evaluation, education, and communication
- Record, analyze, determine, and interpret the protocol for the diagnostic examination using ultrasonographic tools and instrumentation
- Evaluation and documentation of the diagnostic examination results
- Participation of quality improvement programs
- Maintains a safe environment of care

Scope of Practice and Clinic Standards

Invasive Cardiovascular Technologist Professional

The Society of Invasive Cardiovascular Professionals (SICP) drafted the following scope of practice and clinical standards for invasive cardiovascular technologist. [SCIP Scope of Practice and Clinical Standards for the Invasive Cardiovascular Technologist](#)

Adult Echocardiographer and Vascular Sonographer Professional

A number of professional organizations in the field of diagnostic medical sonography collaborated and drafted the scope of practice and clinical standards for diagnostic medical sonographers which includes diagnostic cardiac sonographers and vascular sonographers/technologists. [Scope of Practice and Clinical Standards for the Diagnostic Medical Sonographer](#)

Professional Code of Ethics

Invasive Cardiovascular Technologist

[SCIP Code of Ethics for Registered Invasive Specialists](#)

Adult Echocardiographer and Vascular Sonographer

Society of Diagnostic Medical Sonography [SDMS Code of Ethics for the Profession of Diagnostic Medical Sonographers](#)

Occupational Risk

Invasive Cardiovascular Technologist

According to an article titled Occupational Health Risks in Cardiac Catheterization Laboratory Workers from 2016, Orthopedic strain and radiation exposure are recognized risk factors in personnel staff performing fluoroscopically guided cardiovascular procedures. The primary risks mostly related to work activity and radiation exposure included orthopedic illnesses (back, knee, and neck), cataract, skin lesions, and cancers, particularly in workers with longer duration of occupational work. Note that proper ergonomics and radiation safety is taught to students and radiation monitoring is monitored for each student to ensure they are within the acceptable range.

Another occupational risk in the cardiac catheterization lab is blood borne pathogens. The students are educated on blood borne pathogen risk and prevention annually through the Care Learning course.

Adult Echocardiographer and Vascular Sonographer

According to the 2016 Industry Standards for the Prevention of Work-Related Musculoskeletal Disorders in Sonography, A 2009 study indicated 90% of clinical sonographers experienced symptoms of Work Related Musculoskeletal Disorders (WRMSDs). WRMSDs are painful injuries affecting the muscles, nerves, ligaments, and tendons of sonographers and other users of diagnostic medical sonography. WRMSDs develop gradually over a period of time from repeated exposure to risk factors and are among the most frequently reported cause of restricted or lost work time. WRMSDs can impose a substantial personal toll on those affected since they may no longer be able to work or perform simple personal tasks and activities of daily living. Preventing injury or managing the progression of symptoms can be achieved by improving working posture and the ergonomics of the work environment. Note that proper ergonomic technique is taught to students and the students are assessed on proper ergonomics throughout the entire echocardiography program.

Piedmont Technical College Cardiovascular Technology
Policy For Managing Pregnant Radiation Worker/Students

Revised: Dec. 2011/JAA

Female employees/students of childbearing age shall be informed of these policies pertaining to pregnant radiation workers. In briefing the employees/student, the following points shall be addressed by the supervisor or departmental director.

(1) An occupationally exposed radiation worker who is currently wearing a personnel monitor may choose to declare her pregnancy. If she declares, it must be in writing to the Radiation Safety Officer (shown below). The declaration must be signed and include an estimated date of conception. (A simple declaration statement is attached).

(2) A declared pregnant radiation worker/student will be issued a second personnel monitor, which will be positioned under the protective apron at the waist or pelvic level. The exposure on the second monitor shall be maintained on a separate record and identified as exposure to the embryo/fetus.

(3) During the gestation period, the maximum permissible dose to the embryo/fetus, due to the occupational exposure of declared pregnant worker/student, should not exceed 0.5 rem (500 mrem). (Required by the S.C. Department of Health and Environmental Control RHB 3.4 Exposure for special groups. **3.4.2- Exposure to pregnant workers.**, and recommended by the **National Council of Radiation Protection**, report No. 91)

(4) By practicing good radiation safety habits it is usually not necessary to make changes in work assignments for the declared pregnant radiation worker/student. However, should a pregnant employee's/student's monthly fetal dose report exceed a guideline of 50 mrem/ month; her work assignment may be changed at the sole discretion of the Piedmont Technical College. Such changes could result in a change of assigned working hours and/or pay status.

(5) If by the time the pregnant radiation worker/student declares her pregnancy, the dose to the embryo/fetus has exceeded 0.45 rem (450 mrem) (as determined from the whole body personnel monitor), a decision for work (rotation) reassignment will be up to the supervisor or department director. This will be done to keep any additional dose to the embryo/fetus from exceeding 0.05 rem.

(6) Should the declared pregnant radiation worker/student have any questions about the radiation exposure to the embryo/fetus or potential consequences please have the supervisor contact the Radiation Safety Officer.

Radiation Safety Officer: Lynn Cathey

Cardiovascular Technology

Acknowledgement of Radiation Risk During Pregnancy

I, _____ do acknowledge that I have received counseling from _____, regarding my student responsibilities during my pregnancy.

It is clear to me that there is a vanishingly small probability that my clinical rotation will in any way adversely affect my pregnancy. The reading material listed below has been made available to me to demonstrate that the additional risk during my pregnancy is less than that for most occupational groups. I further understand that, although I may be assigned to low exposure duties and provided with a second radiation monitor, these are simply added precautions and do not in any way convey that any rotational assignment in this curriculum is especially hazardous during pregnancy.

1. Stewart C. Bushong. X-Rays and Pregnancy. **Radiologic Science for Technologist.** St Louis, 1997.

Pg. 502-503.

2. NCRP Report No 105 **Dose Limits for the Embryo and Fetus.** National Council on Radiographic

Protection and Measurement, Washington, DC 1989.

3. Richard Carlton, Radiation Exposure and Pregnancy, **Principles of Radiographic Imaging.** New York,

2001. Pg 525

4. NCRP Report No 53: Review of NCRP Radiation Dose Limit for Embryo and Fetus in Occupationally- Exposed Women. **National Council on Radiation Protection and Measures.** Washington, DC 1977

Student Signature _____

Program Instructor Signature _____

Dean of Health Science and Nursing Signature _____

Date _____

Invasive Cardiology Professional Society

Alliance of Cardiovascular Professionals: www.acp-online.org

Echocardiography Professional Societies

American Society of Echocardiography (ASE) website: www.asecho.org

South Carolina Society of Echocardiographers (SCSE) website: www.scsecho.org

Society of Diagnostic Medical Sonography (SDMS) website: www.sdms.org

Vascular Sonography Professional Societies

Society for Vascular Ultrasound website: <https://www.svu.org/>

South Carolina Society for Vascular Ultrasound: <https://www.svu.org/south-carolina-society-of-vascular-ultrasound/>

Society of Diagnostic Medical Sonography (SDMS) website: www.sdms.org

PTC Clubs and Organizations

Clubs and Organizations at PTC are listed in the College Academic Catalog and can be assessed at the following link <https://www.ptc.edu/college-resources/clubs-organizations> .

CVT Club

Membership is required and students are expected to be active participants within the club. Additionally, other memberships are encouraged. Students are also encouraged to become involved in community events and participate in fund raising where monies are designated for CVT related community projects. Officers will be elected.

Lambda Nu Honor Society

Lambda Nu is the national medical imaging honor society which recognizes students who have demonstrated exemplary academic achievement in the Radiology and Imaging Sciences. Lambda Nu promotes research, investigation and commitment beyond minimal program requirements. The Alpha Gamma Chapter of Lambda Nu is open to full-time radiology and imaging sciences students who have a professional course GPA of 3.5 or Higher after four semesters with evidence of professional commitment beyond minimum requirements of the program. To learn more about Lambda Nu, go to: <https://www.lambdanu.org>. **Advisor:** Lena Scott/(864) 941-8618/Scott.l1@ptc.edu