

CARDIOVASCULAR SONOGRAPHY

The Cardiovascular Sonography curriculum provides the individual with the knowledge and skills necessary to acquire, process, and evaluate the human heart and vascular structures. A cardiovascular sonographer uses high frequency sound waves to produce images of the heart and vascular structures.

Course work includes effective communication and patient care skills combined with a knowledge of physics, human anatomy, physiology, and pathology, all of which are essential to obtaining high quality sonographic images. Graduates may be eligible to apply to the American Registry of Diagnostic Medical Sonographers for examinations in physics, cardiovascular physics, vascular physics, and adult echocardiography.

Graduates may find employment in hospitals, physicians' offices, mobile services, and educational institutions.

Code	Title	Hours
Pre-Requisite Courses		
BIO-163	Basic Anatomy & Physiology	5
COM-231	Public Speaking	3
MAT-152	Statistical Methods I	4
PHY-110	Conceptual Physics	3
PHY-110A	Conceptual Physics Lab	1
Total Hours		16

Please note:

BIO-163 Basic Anatomy & Physiology **or** BIO-168 Anatomy and Physiology I **and** BIO-169 Anatomy and Physiology II

MAT-152 Statistical Methods I **or** College Level Statistics

PHY-110 Conceptual Physics and PHY-110A Conceptual Physics Lab **or** College Level Physics

Must be completed by May 15th of the admitting year with a minimum grade of "C" or better. Applicant must show proof of current enrollment in the final required prerequisites when submitting the program application. An official transcript must be on file in the Admissions and Student Engagement Office by 5:00 pm on May 20th. **Official transcripts on file in Student Services by May 20th.**

Course	Title	Hours
First Year		
Fall		
CVS-160	Cardiovascular Sonography Clinical Education I	5
CVS-163	Echo I	4
MAT-143 or MAT-171	Quantitative Literacy or Precalculus Algebra	3-4
SON-112	Sonographic Terminology	1
SON-271	Doppler Sonography Topics	2
	Hours	15-16
Spring		
CVS-161	CVS Clinical Education II	8
CVS-164	Echo II	4
ENG-111	Writing and Inquiry	3
SON-111	Sonographic Physics	4
	Hours	19

Summer		
CVS-162	CVS Clinical Education III	5
	Hours	5
Second Year		
Fall		
CVS-260	CVS Clinical Education IV	8
PHI-240	Introduction to Ethics	3
SON-250	Vascular Sonography	2
	Hours	13
Spring		
CVS-261	CVS Clinical Education V	8
CVS-277	Cardiovascular Topics	2
ENG-112	Writing and Research in the Disciplines	3
PSY-150	General Psychology	3
SON-273	Advanced Vascular Sonography	3
	Hours	19
	Total Hours	71-72

General Admission Requirements for Associate Degree Medical or Cardiovascular Sonography Program

Application Deadline	March 1 - Includes Steps I A, 1 B, and II of the admissions policy
GPA	2.9 cumulative college GPA
Pre-requisite Coursework	Must be completed by May 15th of the admitting year with a minimum grade of "C" or higher. Applicant must show proof of current enrollment in the final required prerequisites when submitting the program application. An official transcript must be on file in Student Services by May 20th for program entry. <ol style="list-style-type: none"> BIO 163 or both BIO 168 and 169-Anatomy and Physiology PHY 110 & PHY 110A- Conceptual Physics & Lab or college-level physics with a lab. COM 231-Public Speaking MAT 152- Statistical Methods I or a college-level statistics course
	Place into ENG 111 and MAT 143 or 171 without a corequisite-see policy for details
CNA	June 15 - see specification in the policy
TEAS	Must score proficient: 58.7 or higher
SON CE Coursework	Additional points will be awarded for completion of SON 3000 and/or SON 3001 - see details in the policy.

Step I-A: College Applicant and Program Admission Requirements

Applicants must be eligible to enter the program-required gateway (college-level) English (ENG 111) and Math (MAT 143 or 171) courses

without a co-requisite or have successfully passed English and Math transition course(s) before entry into the program.

- If you are not a current JCC student, complete Johnston Community College Application. *(If you are a current JCC student, please proceed to step II-you have already completed this step).*
 - Applicants must complete the Residency Determination and online Admissions application to JCC.
 - If you have not been enrolled at JCC within the last 12 months, you must reapply to the College.
- Official high school or official high school equivalency transcript on file in Student Services.
 - Official transcripts must be in a sealed envelope or sent electronically directly to the College. Electronic transcripts may be sent to: jccadmissions@johnstoncc.edu (%20jccadmissions@johnstoncc.edu)
- All foreign transcripts (secondary and post-secondary) **must** be evaluated by a JCC recognized evaluation company at the student's expense. For specific details, see International Transcript information in the College catalog.
- Have graduated or will graduate from high school or the equivalent as recognized by the State of North Carolina **before** entering the program.
- Complete the College placement test (if required) or meet test exemption requirements.
- Placement: Applicants must place into ENG 111 and MAT 143 or MAT 171 without a corequisite. If an applicant is required to take a co-requisite course along with the program level English and/ or Math, and is enrolled in that course at the time of the program application deadline, they will be eligible to be considered. The course must be passed with a "C" or higher to remain eligible for admission. Applicants who do not pass the course with a "C" or higher will not be eligible for program admission.
- Applicants must have a minimum of **2.8 or higher cumulative college grade point average**.
 - Applicant must maintain a **minimum of 2.8 or higher** cumulative grade point average to enter the Sonography Program.
- **PC-19 Grading:**
 - The JCC Sonography program is aware of the PC-19 grading system for 9-11th graders and non-graduating seniors implemented during the 2020-2021 Academic School Year which allowed students to either:
 - (1) accept the numerical grade for a course (as of March 13, 2020) OR, if they were meeting course expectations,
 - (2) to accept a grade of PC-19 which would not be calculated as part of their GPA.
 - The Sonography program will accept a grade of PC-19 for any students applying to the program who meet our minimum GPA requirements. All other students will need to take a college-level course equivalent and achieve a C or better in the course to be considered for admission.
- Test of English as a Foreign Language (TOEFL) Scores: (5-year limit on scores). If you graduated from a high school in the United States TOEFL scores are not required.
 - A minimum score of 550 is required for admission to JCC.
 - For specific details, see International Student information on the college website or College Catalog.
- Attendance in a **MANDATORY seated or virtual Health Science Information Session is required.**

- Applicants are encouraged to schedule an appointment with the Health Science Navigator via Appointment Plus to discuss program requirements.

Step I-B: Prerequisites

Deadline Date: Courses May 15th

- **Official transcripts for prerequisite courses must be on file in Student Services by May 20th**
- **Prerequisites:** Must be completed by May 15th of the admitting year with a minimum grade of "C" or better. Applicant must show proof of current enrollment in the final required prerequisites when submitting the program application.
 - BIO 163 – Anatomy & Physiology or both BIO 168 & BIO 169
 - PHY 110 & PHY 110A – Conceptual Physics & Lab or college level physics with lab
 - COM 231 – Public Speaking
 - MAT 152 – Statistical Methods I or a college-level statistics course
 - CNA I Certification with current listing on the NCNA (*Certified by June 15 of admitting year*)
 - Complete a North Carolina state-approved Nurse Aide I course to include theory, lab, and clinical components. *Challenging the NA I examination will not meet this requirement.*
 - Current (active) listing on the NCNA registry by **June 15** with no substantiated findings of resident abuse, resident neglect, or misappropriation of resident property in a nursing facility.
 - CNA is not required for applicants holding an Associate Degree or Bachelor's Degree in Nursing or an Allied Health Degree* and are currently certified or applicants currently enrolled in the final semester of a Nursing or Allied Health Profession*. Applicants enrolled in the final semester of a nursing or allied health program must provide a letter from the program director verifying enrollment and anticipated graduation date. Note: State-approved high school Nurse Aide training programs meet the same standard as all other state-approved Nurse Aide I training programs in North Carolina.

*Eligible Allied Health Profession Degree: Nursing, Radiography, Respiratory Therapist, Physical Therapist, Sonography, Paramedic, A.A.S.

Nuclear Medicine, A.A.S Surgical Technologist, LPN, and Certified CMA. Additional healthcare professions with direct patient care will be evaluated on an individual basis.

Step II: Program Application and ATI Test of Essential Academic Skills

- Submit Sonography Program Application - ***The deadline to apply and have all contingent admission requirements completed (Steps I and II) is March 1st. If the deadline falls on a weekend, all materials and documents are due the Friday before the stated deadline.*** Only completed packets can be processed.
 - The following must also be included with the Sonography Program Application:
 - **Nursing Assistant I:** Complete or show enrollment in a North Carolina state-approved Nurse Aide I course and current (active) listing on the NCNA registry by June 15th of the admitting year with no substantiated findings of resident

abuse, resident neglect, or misappropriation of resident property in a nursing facility. *Note: A copy of the certificate of completion OR transcript OR registration form showing current enrollment in an approved program OR a letter (on official letterhead) from the NCNA showing completion of an approved program must be submitted with the Sonography Application form. An approved program will have classroom, laboratory, and clinical components. Challenging the Nurse Aide, I examination will not meet this requirement.*

OR

- Transcript of Degree or Diploma for an *eligible Allied Health Profession and copy of current license/certification (See Step 1-B for list of eligible degrees)
- Official transcripts of **all Colleges attended** on file in Student Services by the program application deadline date of March 1 for points to be considered on point ranking. (note if you are enrolled in prerequisite courses in the spring semester, you must submit an additional college transcript by May 15-see Step I-B.)
 - Official transcripts must be in a sealed envelope or sent electronically directly to the College. Electronic transcripts may be sent to: jccadmissions@johnstoncc.edu (%20jccadmissions@johnstoncc.edu)
- Complete the ATI TEAS TEST:
 - **ATI TEAS TEST Version 7 is required.**
 - JCC offers TEAS testing. However, the College does accept transfer scores from ATI.
 - Please note only scores from ATI are accepted.
 - Applicants must send their official score transcript via ATI to Johnston CC ADN for program consideration
 - Applicants must achieve a **minimum of 58.7- proficient** on the overall adjusted individual score of the TEAS test to be considered for admission.
 - TEAS scores are valid for **three (3) years and must be completed and submitted to JCC by the application deadline date.**
 - View the Jaquar Tutoring (<https://www.johnstoncc.edu/studentresources/jaquar-tutoring/>) and ATI website (<https://www.atitesting.com/>) for additional information.

Step III: Ranking and Notification of Admission Status

- Students are ranked objectively and anonymously using the point ranking from highest to lowest.
- Points are awarded for the following (**MUST BE COMPLETED BY THE APPLICATION DEADLINE DATE TO BE CONSIDERED FOR POINTS**)
 - TEAS scores
 - Courses completed with a grade of "C" or higher by the application deadline date
 - MAT 143 or MAT 171
 - ENG 111
 - ENG 112
 - PSY 150
 - PHI 240
 - MED 120 or 121
 - Successful completion of SON 3000 Foundations of Sonography class taken within 3 years at JCC will provide additional points.
 - If applying to Cardiovascular Sonography-successful completion of SON 3001 Intro to Cardiac Anatomy and EKG class within 3 years at JCC or completion of a Cardiovascular Technician course and having current EKG certification will provide additional points.

- If two or more applicants have the same number of points; ATI TEAS scores will determine the final ranking.
- Applicants are notified of contingent acceptance in April.
 - Applicants contingently accepted will move to Step IV.
 - Applicants not accepted may be placed on an alternative list (for the current admitting year ONLY) or not accepted.
 - Applicants not accepted may schedule an appointment with a counselor to discuss other educational opportunities or continue with college coursework and reapply the next year.
 - Program applications are not carried over from one year to the next. They must be submitted **each year** to be considered.
 - Johnston Community College does not create a waiting list for the Sonography Program.

Step IV: Acceptance

- Those students contingently accepted to the Sonography program in Step III must:
 - Return acceptance to the Health Science Student Navigator within five (5) business days of the date of the emailed notification.
 - After five business days, the applicant will lose their seat and the next applicant on the list will be contacted.
 - Attend a mandatory orientation as designated in June.
 - Provide documentation of satisfactory physical and emotional health and current immunizations after receipt of conditional acceptance and before final admission into the Sonography program.
 - The physical form will be provided upon acceptance.
 - Provide documentation of program-required immunizations as noted in the HWHS Compliance Policy for Clinical Placement.
 - Basic Life Support/CPR certification: Provide evidence of current CPR certification by the **American Heart Association** at the Healthcare Provider level (adult, child, & infant) and maintain CPR certification while enrolled in the Radiography program.
 - Background Check and Drug Screen: Submit criminal background checks and initial and random drug screenings as directed by affiliation clinical agencies.
 - Criminal background checks and drug screenings are completed through the college's designated service provider and the student incurs costs.
 - Clinical agencies may require criminal background checks and drug screenings every six months while enrolled in the program.
 - Information obtained from the criminal background checks and drug screenings could jeopardize the student's ability to participate in clinical experiences and will result in the inability of the student to complete the program or become ARRT certified***.
 - Provide evidence of individual medical insurance coverage.

Application for Certification-Ethics Requirements

American Registry for Diagnostic Medical Sonography

The application for certification examination with the American Registry for Diagnostic Medical Sonography adheres to standards outlined in their compliance policies for certification.

Individuals/Applicants who engage in any conduct or activities that violate the ARDMS compliance policies will be subject to sanctions by this certification agency. Please refer to the American Registry for Diagnostic Medical Sonography (<https://www.ardms.org>) for further information on the Compliance Policies.

American Registry of Radiologic Technologists

The application for certification examination with the American Registry of Radiologic Technologists (ARRT) contains questions regarding the following:

1. Has the applicant ever been charged with or convicted of a misdemeanor or felony (including court convictions and military court-martial)?
2. Has the applicant ever had disciplinary actions from a certification or regulatory board regarding a professional license, permit, registration, or certification?
3. Has the applicant ever voluntarily withdrawn- or been suspended, dismissed, or expelled from an educational program that you attended in order to meet ARRT certification requirements? If the answer is yes to any of these questions, the ARRT may deny an application for certification based on these questions. If a student has a question about their eligibility for certification, a pre-application process is available and you may request more information from ARRT (<https://www.ardt.org>).

Both ARDMS and ARRT certification agencies have ethics review preapplication options to determine eligibility for certification.

Some states require State Licensure. Students would need to inquire with the specific agency of the state requesting licensure for requirements.

Deferred Action of Childhood Arrivals (DACA) and Undocumented students

Per State Board of Community College Code 1D-SBCC 400.2

DACA students

DACA students may not be eligible to sit for licensure but are not prohibited from enrolling in a health science program that leads to licensure. However, acceptance into the college does not guarantee acceptance to a specific program. DACA students MUST meet all of the program requirements for consideration and acceptance as does any other student.

Undocumented students

Undocumented students are not eligible to apply to a health science program. According to NC and Federal Law, undocumented students are not eligible for NC professional licensure.

This policy is subject to change without notice based upon federal and state regulations.

Johnston Community College reserves the right to change any restrictions or program requirements at any time. Every effort is made to provide a one-year notice, however, changes or revisions that occur as the result of accreditation or approval body standards and criteria may be implemented with limited notice.

The JCC Cardiac & Vascular Sonography Program has established technical standards and performance criteria that must be met by the

students in the program. Information regarding anticipated work criteria is also included.

Technical Standards:

Each student must be able to:

1. Reach up to six (6) feet off the floor.
2. Communicate in a clear and concise manner in English language to people in various departments. Spanish is optional.
3. Read and apply appropriate instructions in treatment charts, notes, and records.
4. Lift fifty (50) pounds of weight, up and over head level.
5. Move immobile patients from stretcher to sonography table with assistance from department personnel.
6. Push standard wheel chair from waiting area or patient's room to the ultrasound room.
7. Comprehend and apply clinical instructions given from departmental personnel.
8. Utilize keyboard for inputting clinical data into console, computers, and charts.
9. Visually monitor patients and review images in dimmed light.
10. Ability to hear within normal limits (aided or non-aided).
11. Ability to visualize colors.
12. Speech discrimination within functional limits for telephone and personal communication.
13. Visual acuity of 20/60 in at least one eye (with or without correction).

Physical Demands:

Standard	Requirement
Sitting	< 2 hours/day
Touch/Sensation	YES
Standing	80%
Manual Dexterity	YES
Walking	4-6 hours per day
Grasping	YES
Reaching	Frequently
Pushing	YES
Bending	Frequently
Pulling	YES
Stooping	Moderate
Visual Ability	YES
Crouching	Moderate
Hearing Ability	YES
Kneeling	Occasional
Clear Dictation/Speech	YES
Ability to Work long hours	YES

Mental & Visual Demands (Student and Sonographer):

1. Ability to work in a noisy environment with many interruptions.
2. Ability to remember and recall a large amount of information.
3. Ability to accurately read and transcribe illegible handwriting.

4. Ability to assess patient and other situations rapidly, determine the course of action, delegate activities to co-workers, and/or respond as appropriate.
5. Ability to use equipment safely and correctly, such as equipment locks, IV pumps, stretchers, etc.
6. Ability to explain procedures and patient preparations clearly and simply in person, over the telephone, and in writing.
7. Ability to hear, understand, and respond appropriately to comments, questions, and instructions given in person, over the telephone, and in writing.
8. Ability to determine colors as displayed on equipment as well as in relation to the patient's condition.
9. Ability to calmly and politely cope in stressful situations, in emergency patient situations, or situations with other staff members.
10. Ability to assess work demands; personally organize and perform or assign others to meet the demands.
11. Ability to effectively communicate in the medical environment with other health care professionals and patients/family members.
12. Ability to apply critical thinking skills in regard to obtaining adequate clinical history from the patient and correlating that information with exam findings.
13. Ability to maintain patient confidentiality at all times.

Qualifications for Employment: (may vary with employer)

- Certification by the American Registry of Diagnostic Medical Sonographers (ARDMS) to practice as a Registered Diagnostic Medical Sonographer. Certifications are available in different imaging specialties in the medical sonography profession.
- Current CPR certification.
- Current infection control requirements as mandated by employer.
- Current medical information.
- Current compliance with OSHA requirements and regulations regarding risk management, safety training, universal precautions training, and bloodborne pathogen training.

Work Environment to be Anticipated:

Routine and acute patient care situations in the assigned area of work such as diagnostic radiography, CT, MRI, Nuclear Medicine, Ultrasound, etc. Exposure to ionizing radiation, blood and body fluids, chemicals for cleaning, medications, and pathogens. Contact with manual and electronic equipment such as keyboards, control panels, stretchers, IV pumps, computer terminals, facsimile machines, etc.

Patient care may include working with IV's, bed pans, urinals, and urinary catheterizations. Sonographers and students will perform scans of breasts, scrotums, endovaginal, or endorectal regions, and surgical procedures. Workload may require altered break/lunch schedules.

Nature of Work/Training that may be Required:

Responsible and accountable for assessing, planning, implementing, and evaluating patient care assignment. Responsible and accountable for performing/supervising/delegating care and tasks. Assigned patients may vary in age from infancy through geriatrics. Hours of work and length of shift may vary from the established schedule. Patients are assessed and decisions are made about changes in their conditions, verbal and written reports are made to others on the health care team. Care is coordinated and documented by the technologist. Technologists (not students) may be required to provide call-back coverage for the ultrasound departments.

Potential Hazards of Work/Training:

Increased risk for exposure to various diseases, viruses, etc. while in the patient care/clinical setting. Increased risk for musculoskeletal injuries or repetitive strain injuries. Increased risk for carpal tunnel syndrome.