



Cardiovascular Technology / Echocardiography Program (CVT/Echo Program)

Please check [CCSF CVT/Echo](#) website HCT programs for changes or updates

Contacts: CVT/Echo Program

Jennifer Garcia jgarcia@ccsf.edu

David Fu davfu@ccsf.edu

Next starting class will be August 2024

The program begins a new class every two years: Fall 2024 and Fall 2026

CVT/Echo offers courses and clinical training to learn the following skills Cardiac Ultrasound (also known as adult echocardiography)

Cardiovascular courses include: cardiac anatomy, cardiac ultrasound, physics of ultrasound, ECG's interpretation, stress testing, pacemaker interpretation, stress echo, cardiac pharmacology. Echo Internships are arranged with regional echocardiography departments

The ultrasound field is a sophisticated health care field that combines technology, independent analysis, patient and professional interaction.

Program Description

- Next starting class is August 2024. The CVT/Echo Program is a two-year program.
- The CVT/Echo Program will intake students every two years: next intake is 2024 & 2026
- There is no option to take this program in one year or to extend it over multiple years.
- The CVT/Echo Program is an impacted program so the number of students accepted is limited
- **Physical expectations for clinical internships:** Students must meet employment-determined job description requirements. Students must be able to perform ultrasound scans (sitting or standing) for an eight-hour internship shift. Student must be able to perform patient care including transferring, positioning, and assisting patients, moving ultrasound systems weighing 300-350 pounds to patient rooms, emergency departments, & critical care units. Must be able to move and adjust patient beds and patient care equipment.
- **Students must be able to provide their own transportation** to clinical assignments which are located throughout the Bay Area
- Students can complete the program with a Certificate of Completion or if all college course requirements are completed with an Associates of Science in CVT/Echo.



Prerequisites for entering the CVT/Echo Program August 2024

This program, like all health care programs, is impacted. Twenty students out of an expected 80-100 applicants will be accepted into the CVT/Echo Program for August 2024.

Please check website for any changes

Due to increased educational requirements by the national registry organization, students should complete with the minimum educational units to equal an AS Degree with CVT/ECHO as their major.

1. **College level anatomy:** Successful completion of college-level anatomy (within the last 5 years): Bio 106 or Bio 108 or equivalent course with a grade of “C” or higher. The anatomy requirement must be completed by the December before the application process.
2. Successful completion of an electrocardiography course within the last 2 years: ECGT 101 or equivalent course. The equivalent ECG course must be 4 units or more and have an in-person lab. Online ECG courses are not accepted. The ECG Technician course must be completed by the December before the application process. Applicants who have completed an ECG Technician course and are currently working as an ECG Technician at the time of applying are not subject to the 2-year requirement but must provide proof of current employment. This new requirement is pending approval by the CCSF Curriculum Committee and will be effective for the fall 2024 admission.
3. All eligible applicants are selected by lottery and will be notified of their status.
4. **English pre-req:** ENGL 96 or ENGL 88 or ENGL 88B or ESL 188 or eligibility for College level English.

Requirements

The CVT/Echo Program is a four-semester (two-year) degree program. Students must enroll in both CVT and Echo courses each semester. They must take all courses in sequence within the two-year program.

Students who are new to City College of San Francisco must complete and submit a separate application for the College:

1. Attend the mandatory CVT/Echo Orientation
2. Complete a CCSF Credit Application
3. Registration is by cohort. Students will be notified of the process.



Orientation Information

The CVT/Echo Program only admits students every two years. The orientations are held in the spring for the fall admission. The orientation dates will be published on a flyer in February. Applicants must have completed the required prerequisites before the application process.

Highly recommended courses and health care experience

Completion of college general education requirements, so the CVT/Echo can be completed with an AS degree
Volunteer experience or employment in a medical facility
College level Algebra, Physics, Medical Terminology

Steps for Applying to CVT/Echo Program

1. Submit a completed CCSF application to the college. College applications available online.
2. **Applications to the CVT/Echo Program will ONLY** be emailed to attendees after the orientation is completed.
3. Complete the application to the CVT/Echo Program and submit with the required documents. **(available only after attendance to the orientation meeting)**

Orientation/Application Meetings for Fall 2024

- 1) Orientation/Application dates will be held via zoom by appointment only
April 17, 2024 and May 8, 2024 at 6:00pm
Contact: Christie Wei
cwei@ccsf.edu 415-561-1813
- 2) Information offered about program & employment opportunities
- 3) General counseling offered regarding college information



SEQUENCE OF COURSES

The following sequence of courses does not include AS degree graduation requirements.
 All courses must be completed in sequence and must be passed to advance to the next semester.

Subject to change

Course	Units	Total
Fall Semester		
CVT 102 – Introduction to Sonography and Patient Care (required for fall 2026)	2.00	
CVT 110 - Cardiovascular Skills	7.00	
ECHO 101 - Echocardiography	7.00	16.00
Spring Semester		
CVT 201 - Advanced Cardiovascular Technician	4.00	
CVT 210A - Introductory Echocardiography Professional Practice	5.00	
ECHO 201 - Advanced Echocardiography Technician	7.00	16.00
Summer Session		
CVT 210B - Introductory Echocardiography Professional Practice Work Experience	2.00	2.00
Fall Semester		
CVT 301 - Physics of Cardiac Ultrasound	3.00	
CVT 310A - Intermediate Echocardiography Professional Practice	4.00	
ECHO 301 - Advanced Cardiac Abnormalities	5.00	12.00
Spring Semester		
CVT 310B - Intermediate Echocardiography Professional Practice Work Experience	6.50	
CVT 410A - Echocardiography Professional Practice	3.00	
ECHO 401 - Advanced Echocardiographic Studies	6.00	15.50
Summer Session		
CVT 410B - Echocardiography Professional Experience	6.50	6.50
Total:		68.00



CVT/ECHO CURRICULUM DESCRIPTION

First Year

First semester (Fall)

Echo 101 Echocardiography 7 units

Cardiac anatomy and physiology. Principles of cardiac ultrasound Standard cardiac ultrasound images: 2-D and M-Mode, Identification of images & interpretation of normal cardiac structures & function Cardiac Doppler: PW, CW and Color Flow Doppler

CVT 102 Introduction to Sonography and Patient 2 units

Appreciate work ethic in sonography. Offer some information regarding current and future applications of ultrasound in medicine. Offer some information regarding current and future applications of ultrasound in medicine. Provide a brief overview of law and legal concerns in medicine. Offer an analysis of the sonographer's scope of practice. Recognize the importance of communication in patient care. apply proper patient care techniques in obtaining vital signs and patient mobilization. Appreciate the need to use standard precautions and personal protective equipment.

CVT 110 Cardiovascular Skills 7 units

3 hours a week: In the John Adams Campus classroom echo / ECG lab

3 hours a week: Evening practice with fellow students: California Pacific Medical Center or other facility as indicated, Student is expected to provide her/his own transportation to these sites.

Second semester (Spring)

Echo 201 Advanced Echocardiography Technician 7 units

Echo and Doppler evaluation of valvular abnormalities, cardiomyopathies, prosthesis, endocarditis, cardiac masses. Application of Doppler formulas to calculate systolic and diastolic function. Transesophageal Echocardiography (TEE) views and Doppler findings

CVT 201 Advanced Cardiovascular Technician 4 units

Advanced ECG interpretation: myocardial infarction patterns, heart blocks, bundle branch blocks, heart block, accessory pathway conduction abnormalities. Pacemaker technology

CVT 210A Introductory Echocardiography Professional Practice 5 units

Students will complete 6 hours a week of observation in the San Francisco Bay Area. Observation will be in ECG labs, exercise stress testing and echocardiography labs. The assignments will be made by the CVT Program Director. Students must be able to provide transportation to the assigned labs.

Summer Session

CVT 210B Introductory Echocardiography Professional Practice Work Experience 2 units

Students will complete 6 hours a week of observation in the San Francisco Bay Area. Observation will be in ECG labs, exercise stress testing and echocardiography labs. The assignments will be made by the CVT Program Director. Students must be able to provide transportation to the assigned labs.

Second Year

Fourth Semester (Fall)

Echo 301 Advanced Cardiac Abnormalities 5 units

Cardiac embryology, congenital echocardiography, stress echocardiography, electrophysiology studies with cardiac imaging, surgical ultrasound, intracoronary ultrasound.



CVT 301 Physics of Cardiac Ultrasound 3 units

Principles of Ultrasound: components of a sound wave, pulse wave instrumentation, image storage display, color Doppler and color flow imaging, image characteristics and artifacts, ultrasound equipment quality assurance, bioeffects and safety considerations.

CVT 310A Intermediate Echocardiography Professional Practice 4 units

Students will practice cardiac ultrasound scanning in assigned echo labs in the SF Bay Area. Students will be expected to provide their own transportation. Assignments will be made by the CVT Program Director.

Fifth Semester (Spring)

Echo 401 Advanced Echocardiographic Studies 6 units

Review clinical experiences and application of new technology: strain,3D, TEE in the OR, carotid ultrasound.

CVT 410A Echocardiography Professional Practice 3 units

Students will complete 32 hours/week of a clinical internship. This advanced clinical training will prepare students for employment at the completion of the program. Internships will be assigned by the director of the program.

CVT 310B Intermediate Echocardiography Professional Practice Work Experience 6.5units

Students will practice cardiac ultrasound scanning in assigned echo labs in the SF Bay Area. Students will be expected to provide their own transportation. Assignments will be made by the CVT Program Director.

Summer Session

CVT 410B Echocardiography Professional Experience 6.5 units

Students will complete 32 hours/week of a clinical internship. This advanced clinical training will prepare students for employment at the completion of the program. Internships will be assigned by the director of the program.

Clinical Assignments

Assignment locations and dates are made by the CVT/ECHO Advisor. Assignments will be made in various hospitals and offices in the bay area. All students must comply with the assignments or risk missing a clinical rotation. Students are responsible for their own transportation. Students will comply with the hours for assignments that are designated by the clinical department (i.e. start/finish hours, lunch hours) and all hospital and departmental regulations.

Semester 1 (Fall)	Semester 2 (Spring)	Semester 3 (Summer)	Semester 4 (Fall)	Semester 5 (Spring)	Semester 6 (Summer)
Clinical Lab Experience 18 weeks	Clinical Lab Experience 18 weeks	Clinical work Experience Internship 8 weeks	Clinical work Experience Internship 18 weeks	Clinical work Experience Internship 18 weeks	Clinical work Experience Internship 8 weeks
Classroom 6 hours week at college	Classroom 6 hours week at college 8 Hours week at assigned medical center	May be required	24 hrs./week in assigned internship echo lab	24-32 hrs./week in assigned internship echo lab	May be required



Advancement in the Program

Each course must be passed with a “C or 75%” or better to continue in the program and advance into the next semester of courses. Classes cannot be repeated or postponed to future years. All courses must be passed to gain a certificate in the program. Students will not be allowed to repeat the CVT/Echo Program.

CVT /Echo Career Opportunities

Opportunities for work in the Bay Area are very good but related to the overall regional and state economy. Best options for work opportunities are located outside the city of San Francisco. Employment from the CVT/Echo Program has been greater than 90% for each graduating class.

CVT/ECHO Program Associates Degree or Certification: 2 options

- CVT certificate: program is a two-year program. A certificate is given if all courses have been completed with a "C" or 75% or better pass in all classes.
- AS Degree: completion of CVT/Echo Program and other general requirements can result in an AS degree with a CVT major.

All Applicants

All students will be notified of their acceptance status at the end of the second week of July.

Physical requirements for a student in the CVT/Echo Program

Students will be expected to meet the physical requirements required of employment standards for cardiac sonographers: ability to transfer patients from wheelchair to bed, push and position ultrasound system to patient rooms, move patient furniture to accommodate ultrasound system, stand or sit for cardiac to perform ultrasound scans (sitting or standing) for an eight-hour educational shift.

Student Background Checks and Drug Testing

1. **Background Check Requirement:** A background check is required to be completed within the six weeks of the first semester of the program. The Program will supply the student with the contact information of the company that CCSF utilizes for these checks. The cost for this will be incurred by the student.
 - a. A positive background check finding may prevent successful placement into clinical rotations and the inability to complete the required clinical hours for completion of the CVT/ECHO Program within the two-year program.
 - b. A positive background check will require a pre-application procedure with national registering organizations: ARDMS and/or CCI to approve application.
 - c. Clinical sites reserve the right to see the background check results.
 - d. Clinical sites may request an updated Background Check during the second year of the program or before the start of the internship. (Determined on a site-by-site basis)



2. **Drug Screening Requirement:** Drug screening is required. The cost of this will be incurred by the student. The program will supply the student with the contact information of the company that CCSF utilizes for this screening. Drug screening must be completed within the first six weeks of admission into the program and may need to be updated with each clinical rotation.
- a. Clinical rejection due to any positive drug screen finding including some drugs (including cannabis) that are prescribed or un-prescribed will be cause for program dismissal.
 - b. Any change in drug screening status while in the program may also be cause for program dismissal.
 - c. A positive Drug Screening will require a pre-application procedure with national registering organizations: ARDMS and/or CCI to approve application.
 - d. Clinical sites reserve the right to see the background check results.
 - e. Clinical sites may request an updated/repeat Drug Check during the second year of the program or before the start of an internship.

Health Requirement: Enrollment into the Cardiovascular/Echocardiography Program is subject to evidence of immunization within the **first month** of the start of the program.

In addition, students must complete a **physical examination** given by a licensed health care provider and proved to be physically able to perform the functions of this profession. The cost of this will be incurred by the student. All health requirements must be completed prior to any clinical placement. Immunization and TB testing may be required for each new clinical assignment. Health forms to be provided by the program.

The student must provide proof of the following, including official laboratory issued **titer** reports on all vaccinations indicating antibodies in their blood for the following diseases and any specifically required for clinical placement. If titer levels do not indicate antibodies, a repeated vaccination and titer levels must be obtained. *All diseases incurred by the student because of this lack of immune system response will not be the responsibility of the CVT/Echo Program or CCSF.*



Additionally: certain clinical sites may require immunizations not listed here.

Medical release completed by physician	This form is supplied by CCSF
Background search and drug testing by CCSF specified testing organization	A record of some misdemeanor and/or felony events may result in inability to place student in internships. Positive drug tests may result in inability to place student in internships.
PPD (TB test)	A PPD (or chest X Ray or QuantiFERON blood test) required within 1 month of start of program). This test will be required at the start of the second year of the program or at the requirement of clinical placement
MMR: measles, mumps and rubella	TITER levels indicating immunity of each is required. Booster vaccines may be required.
Varicella	TITER level required indicating immunity of each is required. Re-vaccine may be required.
dTAP: diphtheria, tetanus, pertussis	Immunity / reactive status required within last 5-7 years.
Seasonal flu shots	Required during each full shot season (fall). Failure to have a seasonal flu shot results in student not having physical contact with patients
CPR card	CPR classes offered at John Adams Center

These vaccinations must be completed by the end of the first month of the start of the CVT/Echo Program. These titer levels may need to be repeated during the two years of the program to meet internship site requirements.

Summary of medical requirements submitted by end of first month of program

Many of these immunizations and titer levels are available at CCSF's Student Health Center, Ocean Campus. Fees may apply to some services.



ESTIMATION OF COST OF PROGRAM All costs subject to change

	Per semester	Total per Program
CCSF College Tuition SF Residents: free tuition	\$46/unit \$782/semester 17 units per semester is typical	\$3,128.00
Health Fee (mandatory for each semester)	\$17.00/semester	\$68.00
Fall 1 st year textbooks Fall 2 nd year textbook	\$390.00 \$125.00	\$515.00
Background check/drug screen This may be requested by clinical site to repeat/update	\$125.00	\$125.00
Embroidered scrub shirt and pants sets (call the bookstore)	\$50.00 (2 sets recommended top and pants)	\$200.00
Student ID	\$6.00	\$6.00
Vaccinations, TB tests, Titer levels, Flu Shot	\$200 (estimate) This will vary depending on internship requirements	\$200.00
ARDMS/CCI	SPI \$250 AE \$275 CCI \$365	\$365-\$890
TOTAL		\$4607-\$5132

Program Contact

Jennifer Garcia, BS, RDCS

David Fu, BS, RDCS

Office: CCSF, John Adams Center, Gym Building, Room 113

jgarcia@ccsf.edu

davfu@ccsf.edu

Phone (415) 561-1813 Fax: (415) 561-1999

Echocardiography Clinical Experience/Internships Sponsored by the CVT/Echo Program

General information: students are assigned to cardiology labs in the Bay Area. All students are assigned to multiple echo labs and are expected to provide their own transportation to these assignments. The variety of labs allows students to experience multiple types of echo labs. Students must be able to provide their own transportation to clinical assignments located throughout the Bay Area.



Frequently Asked Questions

Is the CVT Program Accredited by CAAHEP

The program is not currently accredited by CAAHEP. At the completion of the program students will qualify to take the national registry exams. Students can complete the program with a Certificate of Completion or if all college course requirements are completed with an AS in CVT/Echo

Other ultrasound programs

1. Kaiser Permanente School of Allied Health Sciences
(General and Cardiac Ultrasound Programs)
938 Marina Way S Richmond, CA 94804
Website: [KPSAHS](#)
Phone: (888) 299-0077
2. Foothill Community College (General Ultrasound and Vascular programs)
12345 El Monte Road Los Altos, CA 94022
Website: [Foothill College](#)
Phone: (650) 949-7777
3. Loma Linda University (Diagnostic Cardiac Sonography)
Loma Linda, CA 92350
Website: [Loma Linda University](#)
Phone: (909) 558-1000
4. Community Medical Centers
(General and Cardiac and Advanced Cardiac Sonography Programs)
2823 Fresno St. Fresno, CA 93721
Website: [Community Medical Centers](#)
Phone: (559) 459-2731
5. Oregon Institute of Technology
(offers distance-learning: Bachelor's Degree Program in Ultrasound)
3201 Campus Drive Klamath Falls, OR 97601
Website: [OIT](#)
Phone: (541) 885-1676
6. Grossmont Community College
(Cardiac, Vascular Ultrasound & Cardiac Cath Programs)
Grossmont College Drive El Cajon, CA 92020
Website: [Grossmont College](#)
Phone: (619) 644-7000
7. Community College of Spokane (Echocardiography Program)
1810 N Greene St Spokane WA 99217
Website: [Spokane College](#)
Phone: (800) 248-5644 ext. 7309

Private ultrasound programs

You will need to investigate on your own. Be thorough and cautious, they are expensive, and their clinical internships are often limited. I recommend speaking to graduates of the programs you are interested in.

The CCSF CVT/Echo Program will not provide internships for other programs.



Can anatomy be taken in the summer before the program or concurrently with the first semester?

Anatomy course must be completed by the December prior to the April orientation and application.

Are anatomy classes from other colleges acceptable?

Traditional anatomy courses offered in the standard **18-week**, semester-format (or 2 quarters) from a college or community college are required. Anatomy from private technical programs/vocational colleges will not be accepted.

Are On-line Anatomy courses accepted?

On-line Anatomy courses will not be accepted

Students are expected to take an anatomy course with a lab, typically 4-5 units. If anatomy is not taken at CCSF, the applicant must contact CCSF's counseling department for course equivalency to be approved on an individual basis.

Can the CVT Program be condensed into a single year program or taken on a part-time basis?

No. The academic program and clinicals can only be completed in the two-year format. The program is considered a full-time program.

Can students transfer from other ultrasound programs, including private programs, into the CCSF CVT/Echo Program?

No, transfer students will not be accepted into the program. This CVT/Echo program will not provide internships for any other ultrasound programs.

What are the physical requirements for a student in the CVT/ Echo Program?

Students will be expected to meet the physical requirements required of the employed cardiac sonographers: ability to transfer patients from wheelchair to bed, push and position ultrasound system to patient rooms, move patient furniture to accommodate ultrasound system, stand or sit for cardiac to perform ultrasound scans (sitting or standing) for an eight-hour educational shift.



What are the physical requirements for a cardiac sonographer?

Hospitals: sonographers push ultrasound systems that weigh 350 pounds and more. Most sonographers have to move and arrange patient furniture, hospital equipment to position the ultrasound systems, and position and/or transfer patients.

Cardiology offices: usually do not require pushing equipment and moving furniture. During clinical rotations students will be expected to meet the hospital level requirements of moving equipment, patients and furniture.

At the current time sonographers complete 7-8 cases a day (1 per hour). This requires left (or right) arm and hand strength, while the opposite hand manipulates the ultrasound computer system. Students must be able to perform these standing or sitting.

Students must be able to transfer patients and position patients to obtain optimal image quality.

Job placement

The CVT/Echo Program does not provide job placement, however CVT/Echo students have been very successful in securing jobs in the SF Bay Area, due to the recognized caliber of the academic courses and clinical internships.

Salaries

[Salaries](#) vary depending on if the location is a hospital or private office. Entry level will vary, the range is approximately \$40-\$55 per hour, approximately \$85,000-\$115,000 per year depending on the position and location.

Registry/Credentialing in Ultrasound General information

There are two registering organizations for ultrasound, see below. There is no state licensing required at this time. Most hospitals require cardiac sonographers to be registered, most commonly by the ARDMS. Both the ARDMS and CCI are recognized by the AMA and most insurance providers.

ARDMS: American Registry of Diagnostic Medical Sonography

51 Monroe Street Plaza E 1
Rockville, MD 20852-8401 800-541-9754 www.ardms.org

This organization registers all ultrasound sonographers. For echocardiography the registry is RDSCS: Registered Cardiac Sonographer. At the completion of the CVT Program, students will be qualified to take the RDSCS exams.

CCI: Cardiovascular Credentialing International

1500 Sunday Drive, Suite 102
Raleigh, NC 27607 800-326-0268 www.CCI-online.org

CCI registers all categories of invasive and noninvasive cardiology. The echocardiography exam is the RCS: Registered Cardiac Sonographer. At the completion of the CVT Program, students will be qualified to take the RCS exams