

# ECHOCARDIOGRAPHY - BS

A degree from St. Kate's will give students the best possible professional preparation for a satisfying, rewarding, and successful career in sonography. St. Kate's specializes in educating healthcare professionals - we've been leading the way since 1905. St. Kate's has an outstanding reputation in the healthcare community as the metro area's leading healthcare educator - and an extensive clinical network where students will gain training in real-world conditions.

Sonographers have extensive, direct patient contact that may include performing some invasive procedures. They must be able to interact compassionately and effectively with people who range from healthy to critically ill.

Cardiac sonographers, also known as echocardiographers, use ultrasound to examine the heart's chambers, walls, valves, and vessels. The sonographer uses sophisticated diagnostic ultrasound imaging machines and transducers which use high-frequency sound waves to produce dynamic visual images to complete detailed images and aid in the diagnosis of the patient.

A typical day includes reviewing the patient's history, performing the echo examination along with blood pressures, and presenting the echo findings to the physician and other allied health staff. Sonographers in this field work with healthy and critically ill inpatients and outpatients of all ages in predominantly non-invasive procedures.

An echocardiographer must be organized and able to function independently. They must possess strong human relations and communication skills, be able to cope with high-stress situations, and have the ability to accurately document patient information.

The program is four years in length. Students following this track take two years of liberal arts and sciences courses prior to starting the major courses. St. Catherine University offers a rigorous and comprehensive academic program that can give you credentials and knowledge you can use to work towards becoming a leader in your field.

Clinical experience is a vital part of the program. We offer clinical experiences in the Twin Cities and out-state locations. These experiences allow students to work alongside experts in the field and practice cardiac sonography in a wide range of medical situations.

Upon completion of the program, graduates are awarded a Bachelor of Science in Echocardiography and are eligible to take the national registry exams in sonography principles and instrumentation (SPI) and Adult Echocardiography.

## Acceptance to Major

Admission to the echocardiography major is expected to be competitive. Students will be considered for admission in two groups:

1. Select students are admitted to the guaranteed admission program (GAP) each year. Students who apply on or before February 15 of their senior year will be given priority registration
2. Students who meet the minimum criteria below will be considered. First-year, transfer, and second major students will be considered in one pool, and admission is contingent upon the number of positions available.

- Successful completion of prerequisite courses (C or above)<sup>1</sup>
- Prerequisite GPA of 3.0 or above
- Overall cumulative GPA of 3.0 or above
- No prerequisite course may be taken "Satisfactory/Unsatisfactory."
- If a prerequisite course grade is a C- or lower, this course (or an alternative course approved by the program director) must be successfully completed with a C or above.
- Students who received more than two prerequisites of a W or C- or lower and or are retaken within the last 5 years are ineligible for the sonography major.
- Meet the technical standards below
- Completion of a certified nursing assistant (CNA) course (or an alternative patient care course approved by the program director).

<sup>1</sup>Students are strongly advised to complete college algebra, BIOL 2610 (<https://catalog.stkate.edu/search/?P=BIOL%202610>) Human Anatomy and Physiology I with Lab, and BIOL 2620 (<https://catalog.stkate.edu/search/?P=BIOL%202620>) Human Anatomy and Physiology II with Lab no more than five years prior to entering St. Kate's. Prospective students are advised to contact their admissions counselor for more information. Enrolled students are advised to contact the sonography department program director for more information

## Technical Standards

Students accepted into the Diagnostic Medical Sonography program must meet specific technical standards fundamental for successful and competent performance in sonography as determined by the essential functions performed by sonographers in practice.

Entrance and progression in the Diagnostic Medical Sonography program require the following physical, mental, and emotional/psychological attributes and communication skills. It should be noted that, under the Americans with Disabilities Act, "A qualified person with a disability is one who can perform the essential function of a job with or without reasonable accommodation." Please read the standards carefully and seek clarification if necessary. According to the nature of the work required in Sonography, the student must be able to meet the following standards:

## Physical Attributes:

- Must have discriminating visual capabilities for proper evaluation of the patient and ultrasound image consistent with the abilities to assess asymmetry, discreet tissue texture changes, and color distinctions under dimmed lighting.
- Must be able to distinguish audible sounds to hear information crucial for an appropriate response essential for the safe, effective care and treatment of patients.
- Must be free from health or medical disorders that limit the physical ability to perform, completely and efficiently the duties of a sonographer without risk to self or others.
- Must have manual ambidexterity and adeptness to coordinate the hands and eyes for manipulation of sonographic equipment controls, keyboard, and monitor while performing a procedure.
- Must have the physical stamina to complete the required course of didactic and clinical study according to established procedures and standards of speed and accuracy. Long periods of sitting, standing, or moving are required in the classroom, laboratory, and clinical settings.

- Must have the strength and mobility required for activities associated with daily practice, emergencies, and with invasive sterile procedures.

#### Mental Attributes:

- Must possess the ability to think in the abstract, specifically, to be able to comprehend three-dimensional relationships and understand the spatial relationships of structures.
- Must possess and utilize the mental ability to apply previously learned knowledge. Application of this knowledge includes the ability to measure, calculate, rationalize, analyze, integrate, and synthesize in a timely fashion according to established procedures and standards of speed and accuracy.
- Must make appropriate judgment decisions in routine and emergencies, and situations not clearly governed by specific guidelines.
- Must be free from health or medical disorders that limit the ability to perform, completely and efficiently, the duties of a sonographer without risk to self or others.

#### Emotional/Psychological Attributes:

- Must possess the emotional health and stability required for the full utilization of their intellectual abilities, for the exercise of good judgment, and for the prompt completion of all responsibilities attendant to the diagnosis and care of patients without risk to self or others.
- Must be able to tolerate mentally, and emotionally taxing workloads and function effectively under stress.
- Must be able to display flexibility, versatility, dependability, diplomacy, compassion, integrity, motivation, and interpersonal and professional skills at all times in the clinical and didactic setting.
- Must be free from health or medical disorders that limit the emotional/psychological ability to perform, completely and efficiently, the duties of a sonographer.

#### Communication Attributes:

- Must show evidence of effective and appropriate written and verbal English communication skills throughout the program to all persons in both the academic setting and the clinical health care setting. Communication includes speech, reading, writing, and non-verbal behavior and actions.
- Must have the ability to relate information to and receive information from patients in an accurate, empathetic, ethical, and confidential manner.
- Must be able to understand and convey information essential for the safe and effective care of patients in a clear, unambiguous, and rapid fashion in emergencies.

#### Professional responsibilities include, but are not limited, to:

- Obtain and record an accurate patient history
- Perform diagnostic procedures and obtain diagnostic images
- Analyze technical information
- Use independent judgment in recognizing the need to extend the scope of the procedure according to the diagnostic findings
- Provide an oral or written summary of the technical findings to the physician for medical diagnosis
- Provide quality patient care

- Collaborate with physicians and other members of the healthcare team.

Sonographers must also be knowledgeable about and limit the risk of possible exposure to blood and body fluids. Many sonographers also assist in electronic and clerical scheduling, record keeping, and computerized image archiving. Sonographers may also have managerial or supervisory responsibilities.

The technical standards as stated here reflect performance abilities that are necessary for a student to successfully complete the requirements of the Medical Sonography curriculum:

- Sitting 2 hours per day or less
- Must have touch sensation
- Stand up to 80% of the day
- Must have manual dexterity
- Walk 4-6 hours per day
- Must be able to grasp
- Routinely reach
- Must be able to push a patient and machine
- Must be able to routinely bend
- Must be able to routinely stoop
- Must have a visual and hearing ability
- Must be able to crouch and kneel
- Must be able to speak clearly
- Must have the ability to work long hours
- Must be able to assist patients on/off an examining table
- Must have full use of both hands, wrists, and shoulders
- Must be able to routinely lift more than 50 pounds
- Must be able to transfer patients to and from a wheelchair, stretcher, or bed
- Must be able to move/transfer and skillfully position patients weighing up to 400 pounds
- Must have the ability to push, pull, and manipulate a mobile ultrasound machine for bedside examinations
- Must be able to adequately view ultrasounds, including color distinctions

This major is offered in the College for Women only.

## Curriculum

Code	Title	Credits
<b>Required Courses</b> <sup>1</sup>		
SON 1620	Cardiac Anatomy and Physiology	4
SON 1630	Foundations of Echocardiography	4
SON 1635	Foundations I Lab	1
SON 1645	Foundations II Lab	1
SON 2015	Ultrasound Physics and Instrumentation	4
SON 2100	Adult Echo	4
SON 2115	Adult Echo I Lab	1
SON 2125	Adult Echo II Lab	1
SON 2455	Congenital Heart Disease	2
SON 2460	Concepts in Echocardiography	4
SON 3415	Comprehensive Review Lab	1
SON 4020	Seminar in Advanced Echo Imaging	2

SON 2992	Topics	2
or ADULT ECHO II		
SON 2991	Topics	1
or ADULT ECHO III		
SON 3998	Topics	8
or CLINICAL PRACT		
SON 3425	Clinical Practicum II	2
SON 3430	Clinical Practicum III	8
<b>Total Credits</b>		<b>50</b>

Code	Title	Credits
<b>Prerequisite courses</b> <sup>1</sup>		
BIOL 2610	Human Anatomy and Physiology I with Lab <sup>2</sup>	4
BIOL 2620	Human Anatomy and Physiology II with Lab <sup>2</sup>	4
IPE 1030	Healthcare Teams Foundations and Medical Terminology	2
IPE 1040	Healthcare Teams and Quality Outcomes	2
PHYS 1050	Conceptual Physics (OR PHYS 1080 and PHYS 1090, OR PHYS 1110 and PHYS 1120)	4
SON 1500	Communication for the Sonography Professional	2
College level algebra/statistics or higher <sup>2</sup>		4
<b>Total Credits</b>		<b>22</b>

Code	Title	Credits
<b>Required supporting courses</b> <sup>1</sup>		
COMM 1030	Speaking to Lead and Influence	4
IPE 4200W	Healthcare Teams - Evidence-Based Practice	4
MGMT 3460	Managing Within a Diverse Workforce	4
PHIL 3400	Biomedical Ethics	4
<b>Total Credits</b>		<b>16</b>

<sup>1</sup> Minimum grade of C required

<sup>2</sup> Students are strongly advised to complete college algebra, BIOL 2610 and BIOL 2620 no more than five years prior to entering St. Kate's.

Echocardiography majors satisfy the Writing Requirement for Majors by completing IPE 4200W Research Methods. They complete the Liberal Arts and Sciences Core Writing Requirement with three other writing-intensive courses (CORE 1000W The Reflective Woman or CORE 2000W The Reflective Woman, CORE 3990W Global Search for Justice, and another writing-intensive course in another department).

Code	Title	Credits
<b>Freshman Fall Term</b>		
CORE 1000W	The Reflective Woman	4
Arts & Humanities (writing intensive course)		4
Select one from:		4
ECON 1090	Statistical Analysis for Decision Making	
HLTH 1090	Biostatistics	
PSYC 1090	Statistical Methods in Psychology	

STAT 1090	Statistical Analysis	
Elective Course		4

<b>Freshman Spring Term</b>		
PHYS 1050	Conceptual Physics	4
IPE 1030	Healthcare Teams Foundations and Medical Terminology	2
IPE 1040	Healthcare Teams and Quality Outcomes	2
COMM 1030	Speaking to Lead and Influence	4
Theology Course		4

<b>Sophomore Fall Term</b>		
BIOL 2610	Human Anatomy and Physiology I with Lab	4
SON 1500	Communication for the Sonography Professional	2
MGMT 3460	Managing Within a Diverse Workforce	4
Elective Course		4

<b>Sophomore Spring Term</b>		
BIOL 2620	Human Anatomy and Physiology II with Lab	4
IPE 4200W	Healthcare Teams - Evidence-Based Practice	4
Elective Course		4
Elective Course		4

<b>Junior Fall Term</b>		
SON 1630	Foundations of Echocardiography	4
SON 1635	Foundations I Lab	1
SON 2015	Ultrasound Physics and Instrumentation	4
SON 1620	Cardiac Anatomy and Physiology	4
SON 1645	Foundations II Lab	1

<b>Junior Spring Term</b>		
SON 2100	Adult Echo	4
SON 2115	Adult Echo I Lab	1
SON 2460	Concepts in Echocardiography	4
SON 2125	Adult Echo II Lab	1
SON 2455	Congenital Heart Disease	2
CORE 3990W	Global Search for Justice	4

<b>Senior Fall Term</b>		
SON 3415	Comprehensive Review Lab	1
SON 4020	Seminar in Advanced Echo Imaging	2
SON2992	(Topics Course 1)	2
or ADULT ECHO II		
SON2991	(Topics Course 2)	1
or ADULT ECHO III		
SON3998	(Topics Course 3)	8
or CLINICAL PRACT		

<b>Senior Spring Term</b>		
PHIL 3400	Biomedical Ethics	4
SON 3425	Clinical Practicum II <sup>1</sup>	2
SON 3430	Clinical Practicum III	8

<b>Total Credits</b>		<b>120</b>
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<sup>1</sup> Taken during J-Term