

CARDIOVASCULAR TECHNOLOGY - INVASIVE ASSOCIATE OF APPLIED SCIENCE (AAS) - 60 CREDITS

About this program

The Cardiovascular Technology - Invasive program prepares the graduate to be a competent entry-level cardiovascular technologist in the cognitive (knowledge), psychomotor (skill) and affective (behavior) learning domains for invasive cardiovascular technology. Students will learn to assist physicians in diagnosing and treating cardiac, peripheral vascular, neurovascular and electrophysiological conditions using current technology, physiological and diagnostic equipment, and therapeutic procedures.

Program outcomes

1. Participate as an active invasive cardiovascular team member, demonstrating professional behavior, communication and collaboration.
2. Apply concepts of patient safety, asepsis, infection control and universal precautions.
3. Demonstrate proficient use of technology, equipment, supplies and instruments.
4. Demonstrate professional and ethical behaviors consistent with the role of the cardiovascular technologist.
5. Demonstrate effective, therapeutic communication with patients, families and other members of the cardiovascular team.
6. Demonstrate respect for individual patients, maintaining their dignity, rights and beliefs.
7. Demonstrate problem solving and critical thinking.
8. Apply principles of radiation safety.

Curriculum overview

Crds	Requirement type
60	Required courses
60	Total

Developmental courses note: A student may be required to enroll in developmental courses in reading, writing and math. A student's scores on the Accuplacer assessment will determine enrollment in developmental courses. The purpose of developmental courses is to prepare students for the demands of a college-level curriculum. *Credits may vary.*

Accreditation: Minnesota State Community and Technical College is accredited by the Higher Learning Commission, a regional accreditation agency recognized by the U.S. Department of Education. The Higher Learning Commission 230 South LaSalle Street, Suite 7-500 Chicago, IL 60604-1411 <http://www.ncahigherlearningcommission.org> Phone: 312.263.0456 / 800.621.7440

Curriculum requirement details

Required courses

Other requirements or restricted electives

Course	Crds
BIOL2260 - Human Anatomy and Physiology I	3
BIOL2261 - Human Anatomy and Physiology I Lab	1
BIOL2262 - Human Anatomy and Physiology II	3
BIOL2263 - Human Anatomy and Physiology II Lab	1
BIOL2267 - Medical Microbiology	3
BIOL2268 - Medical Microbiology Lab	1
COMM1130 - Small Group Communication	3
CVRI1100 - Cardiovascular Technology Survey	2
CVRI1105 - Introduction to Cardiovascular Technology	2
CVRI1110 - Cardiovascular Anatomy and Physiology	3
CVRI1120 - Principles of Patient Care	4
CVRI1130 - Cardiovascular Technology I	3
CVRI1136 - Cardiovascular Technology Clinical	2
CVRI2130 - Cardiovascular Technology II	5
CVRI2141 - Pharmacology for Cardiovascular Technology	2
CVRI2146 - Cardiovascular Electrocardiography	1
CVRI2250 - Radiation Safety	2
CVRI2262 - Cardiovascular Technology Practicum I	5
CVRI2263 - Cardiovascular Technology Practicum II	5
CVRI2264 - Cardiovascular Technology Practicum III	5
MATH1114 - College Algebra	4

Course summaries

BIOL2260 - Human Anatomy and Physiology I (3 credits)

Meets MnTC Goal Area 3. This course is a comprehensive introductory overview of human anatomy and physiology that includes basic fundamental concepts of cell biology, tissues and organs making up the integumentary, skeletal, muscular and nervous systems. It is the first of a two-semester sequence in which anatomy and physiology are studied with an emphasis on structure and functions of systems. This course contains a lab-like component.

Prerequisites:

BIOL2261 - Human Anatomy and Physiology I Lab (1 credits)

Meets MnTC Goal Area 3 when taken with BIOL 2260. This course is the laboratory component of a comprehensive introductory overview of human anatomy and physiology that includes basic fundamental concepts of cell biology, tissues and organs making up the integumentary, skeletal, muscular and nervous systems. This course is the first of a two-semester sequence in which anatomy and physiology are studied with an emphasis on structure and functions of systems.

Prerequisites:

Corequisites:

BIOL2262 - Human Anatomy and Physiology II (3 credits)

Meets MnTC Goal Area 3. This course is a continuation of Anatomy and Physiology I. Topics will include the study of cells, tissues and organs making up the endocrine, cardiovascular, lymphatic and immune, respiratory, digestive, urinary and reproductive systems. Emphasis is on the structure and function of included systems. This course contains a lab-like component.

Prerequisites:

BIOL2263 - Human Anatomy and Physiology II Lab (1 credits)

Meets MnTC Goal Area 3 when taken with BIOL 2262. This course is the laboratory component of a comprehensive introductory overview of human anatomy and physiology that includes basic fundamental concepts of cells, tissues and organs making up the endocrine, cardiovascular, respiratory, digestive, urinary and reproductive systems. This course is the second of a two-semester sequence in which anatomy and physiology are studied with an emphasis on structure and functions of systems.

Prerequisites:

Corequisites:

BIOL2267 - Medical Microbiology (3 credits)

Meets MnTC Goal Area 3. This course is the study of the structure and the classification of bacteria, viruses, parasites and fungi of medical importance. It emphasizes the transmission of disease agents, signs and symptoms, immunology, immunization, control of microbial growth, specimen collection/transport, methods of identification and antimicrobial resistance. This lecture course includes lab-like components.

Prerequisites:

BIOL2268 - Medical Microbiology Lab (1 credits)

Meets MnTC Goal Area 3. This laboratory course includes the fundamental techniques of cultivation, staining, biochemical analysis and identification of known and unknown bacterial isolates, and antimicrobial susceptibility testing. Morphological examination and pathogenesis of fungi, protozoans and helminths are also addressed.

Prerequisites:

Corequisites:

COMM1130 - Small Group Communication (3 credits)

Meets MnTC Goal Areas 1 and 2. This course focuses on communication issues in small groups and the importance of small group work in business today. An emphasis will be placed on improving communication skills for successful teamwork, group cohesiveness and the responsibility to group goals and tasks. Students will be provided with opportunities to build their group communication skills through practice.

Prerequisites:

CVRI1100 - Cardiovascular Technology Survey (2 credits)

This course introduces the student to the history and emerging role of cardiovascular technologist. Students will learn medical terminology and have opportunities to observe the role of the cardiovascular technologist in various settings. Students in this course will incur the cost of and be required to receive clear national and Minnesota Department of Health background checks and be listed in the North Dakota Board of Nursing Unlicensed Assistive Personnel Directory.

Corequisites:

CVRI1105 - Introduction to Cardiovascular Technology (2 credits)

In this introductory course, students will explore ethical and legal issues related to patient safety, documentation, informed consent, patient identification and confidentiality. Students will use appropriate medical terminology, abbreviations and symbols. Students will practice professional communication strategies with other health professionals and explore team dynamics.

Prerequisites:

Corequisites:

CVRI1110 - Cardiovascular Anatomy and Physiology (3 credits)

This course provides the cardiovascular technology student an in-depth review of normal anatomy and physiology of the cardiac, cardiovascular, peripheral vascular and neurovascular systems, and renal regulation of blood pressure. The pathophysiology of these systems is examined in order to understand and apply treatment modalities in the cardiovascular catheterization laboratory.

Corequisites:

CVRI1120 - Principles of Patient Care (4 credits)

This course introduces the Cardiovascular Technology student to basic patient care principles. Students will learn basic intracardiac catheterization care including patient assessment, interpretation of laboratory values and diagnostic tests.

Corequisites:

CVRI1130 - Cardiovascular Technology I (3 credits)

This course prepares students to participate in cardiovascular diagnostic and interventional procedures with adult patients. Students will differentiate cardiovascular complications and emergencies, prepare and position patients for various procedures, and set up and maintain sterile fields. Students will learn concepts related to hemodynamics including cardiac output, performance of hemodynamic calculations and recognition of blood flow determinants.

Prerequisites:

Corequisites:

CVRI1136 - Cardiovascular Technology Clinical (2 credits)

In this course, students will participate as part of the cardiovascular, neurovascular, peripheral vascular and electrophysiology teams during diagnostic and interventional procedures.

Corequisites:

CVRI2130 - Cardiovascular Technology II (5 credits)

This course builds on the knowledge and skills gained in Cardiovascular Technology I. Students will learn diagnostic and interventional procedures related to peripheral vascular, neurovascular, congenital and pediatric conditions, and complications and emergencies.

Prerequisites:

CVRI2141 - Pharmacology for Cardiovascular Technology (2 credits)

This course develops the student's awareness of basic pharmacological concepts, drug classifications, indications and contraindications, therapeutic effects, side effects, and other considerations related to use of medications. Students will learn dosage calculations.

Prerequisites:

Corequisites:

CVRI2146 - Cardiovascular Electrocardiography (1 credits)

Students will learn electrocardiography (ECG) electrode placement, ECG measurements and rhythm interpretation for patients experiencing cardiac conditions treated in the cardiac catheterization laboratory.

Prerequisites:

CVRI2250 - Radiation Safety (2 credits)

Students in this course will demonstrate safety related to the use of radiation during catheterization procedures. Students will learn x-ray tube components, x-ray production, characteristics and physics. Students will learn to position patients, perform quality assurance, produce images and differentiate between digital and flat screen imaging. Consideration will be given to radiation biology and radiation protection.

Prerequisites:

Corequisites:

CVRI2262 - Cardiovascular Technology Practicum I (5 credits)

In part one of this capstone course, students will apply the knowledge and skills gained throughout the Cardiovascular Technology program. Students will become certified in Advanced Cardiac Life Support (ACLS) before being assigned to various cardiovascular catheterization laboratory opportunities. Students will function as a part of the cardiovascular team under the supervision of a preceptor. Students will participate in experiences Monday through Friday for the duration of the academic term. Shifts may rotate between day, evening, night and on-call shifts.

Prerequisites:

CVRI2263 - Cardiovascular Technology Practicum II (5 credits)

In part two of this capstone course, students will apply the knowledge and skills gained throughout the Cardiovascular Technology program. Students will function as a part of the cardiovascular team under the supervision of a preceptor. Students will participate in experiences Monday through Friday for the duration of the academic term. Shifts may rotate between day, evening, night and on-call shifts.

Prerequisites:

Corequisites:

CVRI2264 - Cardiovascular Technology Practicum III (5 credits)

In part three of this capstone course, students will apply the knowledge and skills gained throughout the Cardiovascular Technology program. Students will function as a part of the cardiovascular team under the supervision of a preceptor. Students will participate in experiences Monday through Friday for the duration of the academic term. Shifts may rotate between day, evening, night and on-call shifts.

Prerequisites:

Corequisites:

MATH1114 - College Algebra (4 credits)

Meets MnTC Goal Areas 2 and 4. This course includes rational, polynomial, exponential, logarithmic, inverse and quadratic functions. The course also includes equations, inequalities, complex numbers and systems of linear equations. Additional topics may include matrices and determinants.

Prerequisites:

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Program Plan — "Cardiovascular Technology - Invasive"

Locations: Moorhead

1st Fall Term (16 credits)

Courses

Course	Crds
BIOL2262 - Human Anatomy and Physiology II	3
BIOL2263 - Human Anatomy and Physiology II Lab	1
CVRI1105 - Introduction to Cardiovascular Technology	2
CVRI1110 - Cardiovascular Anatomy and Physiology	3
CVRI1120 - Principles of Patient Care	4
CVRI1130 - Cardiovascular Technology I	3

1st Spring Term (17 credits)

Courses

Course	Crds
BIOL2260 - Human Anatomy and Physiology I	3
BIOL2261 - Human Anatomy and Physiology I Lab	1
BIOL2267 - Medical Microbiology	3
BIOL2268 - Medical Microbiology Lab	1
COMM1130 - Small Group Communication	3
CVRI1100 - Cardiovascular Technology Survey	2
MATH1114 - College Algebra	4

2nd Fall Term (15 credits)

Courses

Course	Crds
CVRI2262 - Cardiovascular Technology Practicum I	5
CVRI2263 - Cardiovascular Technology Practicum II	5
CVRI2264 - Cardiovascular Technology Practicum III	5

2nd Spring Term (12 credits)

Courses

Course	Crds
CVRI1136 - Cardiovascular Technology Clinical	2
CVRI2130 - Cardiovascular Technology II	5
CVRI2141 - Pharmacology for Cardiovascular Technology	2
CVRI2146 - Cardiovascular Electrocardiography	1
CVRI2250 - Radiation Safety	2