

Mechanical Systems

► Contact Information

Jeff Kukert, program coordinator
jeffrey.kukert@ndscs.edu
701-671-2515
Barnard Hall 122

► Delivery Methods

Face-to-Face: Wahpeton

The Mechanical Systems program is designed to provide the student with the basic knowledge of the plumbing code, trade skills and good work habits, and to credit the student with hours toward apprenticeship training time. The program also will offer the fundamentals of service and installation of residential and light commercial heating and air conditioning equipment. Qualified graduates will have a variety of occupational opportunities available in the HVAC/R and plumbing industries. General education and related instruction is provided so the student will have the opportunity to grow within the occupational field.

Smaller mechanical contractors may struggle to keep their employees doing just plumbing or just heating and air conditioning work. They require technicians with skills in both areas. The Associate in Applied Science in Mechanical Systems provides the training in both programs over two, nine-month periods on campus.

This curriculum involves state codes, various aspects of materials, equipment and fixtures, service and installation procedures. This requires a working knowledge of the state code, layout of water and sanitation systems in the buildings in accordance with the code. This curriculum also involves doing take-off work from blueprints; working with a variety of materials used in piping such as cast iron, plastic, copper and steel; the setting of various fixtures and proper hookups; and the service of various valves, controls, fixture items and domestic water systems. It will involve the operation, service and repair or change-out of various mechanical equipment, controls and accessories of residential and light commercial systems.

The service of mechanical equipment for heating using fossil fuels requires a knowledge of fuels, fuel-air mixtures, combustion testing, and control systems. The mechanical equipment for cooling requires knowledge of refrigerants and their systems, compressor change-out, refrigerant recovery and recycling, and system clean up. The equipment studied includes gas, oil and electric heating equipment along with conventional cooling equipment and heat pumps.

Students are encouraged to take the bulk of their plumbing coursework first and then return the second year for their HVAC/R Technology coursework. Students who fail to complete all the required general education courses will be granted certificates in each respective program (Plumbing and HVAC/R Technology). Both the Plumbing and HVAC/R certificate course work offer students study in "Green" technologies, which are in increasing demand as skills in this career choice.

Course Code	Course Title	Credits
MSYS 101	Safety for Mechanical Systems Technicians	1
MSYS 151	Drafting and Sketching	2
PLMB 101	Plumbing Theory and Code	4
PLMB 102	Plumbing Theory and Code	4
PLMB 105	Core Curriculum for Plumbers	2
PLMB 111	Plumbing Lab	6
PLMB 112	Plumbing Lab	6
PLMB 132	Plumbing Drawing, Sketching and Design	3
REFG 101	Refrigeration Technology	3
REFG 102	Refrigeration Technology	3
REFG 104	Refrigerants: Chemistry and Ecology	1
REFG 112	Domestic and Residential Systems Lab	2
REFG 113	Refrigeration Systems Lab	2
REFG 121	Electrical Theory I	3
REFG 122	Electrical Theory II	3
REFG 123	Electrical Lab I	2
REFG 124	Electrical Lab II	2
REFG 253	Heating Equipment Theory	2
REFG 255	Heating Equipment Lab	3

Related/General Education

ENGL 110	English Communication	3
English/Communication Elective (choose one)		3
ENGL 105	Technical Communications	
ENGL 120	College Composition II	
ENGL 125	Introduction to Professional Writing	
COMM 110	Fundamentals of Public Speaking	
FYE 101	Science of Success	1
Social and Behavioral Sciences, Humanities, History and/or Computer Electives		4
Recommended:		
• CIS 101 – Computer Literacy – 2 cr		
• PSYC 100 – Human Relations in Organizations – 2 cr		
Math Elective(s)		6
Wellness Elective(s)		2

Total Required Credits 73

Admission Requirements*

The applicants must be high school graduates or equivalent. Students considered for acceptance must complete all admission requirements.

Required minimum placement scores:

<u>ACT</u>	<u>ACCUPLACER</u>	<u>ACCUPLACER</u>
Reading – 15	Reading Comp – 61	<u>NEXT GENERATION</u>
English – 15	WritePlacer – 3-4	Reading – 240
		Writing – 237

Or transfer equivalencies will apply as appropriate

Applicants not meeting the above requirements are encouraged to visit with the academic counselor at 701-671-2257 or the Mechanical Systems department chair at 701-671-2515 for strategies to meet the admission requirements.

**Program Admission Requirements are subject to revision. Please check the department or program website under Program Admission Requirements for current information.*

Award

Upon successful completion of the required courses, students will be awarded an Associate in Applied Science degree in Mechanical Systems.

Revised: May 2021