

Mechanical Systems

Degree Type

Associate in Applied Science

Contact Information

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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 are 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.

NOTE: This program requires either an HP EliteBook 850 or ZBOOK 15 laptop or equivalent. Please refer to the NDSCS website for specifications. The cost will be approximately \$1065.00 for the EliteBook 850 and \$2100.00 for the ZBOOK 15, if purchased through NDSCS. For further information, contact the NDSCS ITS Department at 701-671-3333 option 5. **The laptop is only required in the 2nd year of the Mechanical Systems program.**

Admission Requirements*

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

Please Note: Students are placed into English, math and reading courses based on ACT, ACCUPLACER or other nationally recognized tests. Please see www.NDSCS.edu/current-students/student-success/test-center for the NDSCS Course Placement Policy and testing information. Students may be on an extended plan of study pending their course placement.

**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.

Required Courses

Course Code	Title	Credits
MSYS 151	Drafting and Sketching	2
PLMB 101	Plumbing Theory And Code I	3
PLMB 102	Plumbing Theory And Code II	5
PLMB 105	Core Curriculum for Plumbers	2
PLMB 111	Plumbing Lab I	6
PLMB 112	Plumbing Lab II	6
PLMB 114	Residential Plumbing Application	1
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

Course Code	Title	Credits
ENGL 110	College Composition I	3
	English/Communication Elective (choose one)	3
FYE 101	Science of Success	1
	Social and Behavioral Sciences, Humanities, History and/or Computer Electives (4 credits)	4
	Math Elective(s) (6 credits)	6
	Wellness Elective(s) (2 credits)	2
	Total Required Credits	73