

AUTOMOTIVE TECHNICIAN



Program Code 32-404-2

Estimated Program Costs: \$10,500

Median Annual Salary: \$25,000

OVERVIEW

If you have good mechanical skills and enjoy working with cars, you may find a career as an auto technician very rewarding.

Learn to diagnose, service, and repair automobile and light truck mechanical and electrical problems. You will learn to use a variety of hand and power tools as well as complex electrical diagnostic equipment in identifying and performing repair tasks.

Emphasis is on the areas of engine and transmission repair, drive train and axles, suspension and steering systems, brakes, electrical systems, heating and air conditioning, and engine performance.

The Automotive Technician program is offered at the Wisconsin Rapids campus.

PROGRAM OUTCOMES

Employers will expect you, as an Automotive Technician graduate, to be able to:

- Diagnose, service, and repair automotive systems
- Proficiently operate tools and equipment common to the industry
- Practice safety procedures
- Apply theoretical concepts to mechanical repair
- Comply with regulations that impact the automotive service industry

CAREER OPTIONS

Automotive Machine Shop Technician
Automotive Parts Salesperson
Automotive Technician
Maintenance Technician
Service Station Technician
Small Engine Technician
Specialty Shop Technician
Truck Technician

POTENTIAL FOR ADVANCEMENT

Automotive Technician (Specialist)
Parts Manager
Service Manager
Service Writer
Shop Owner
Shop Supervisor or Lead Technician

Potential advancement generally requires further education.

ADMISSIONS PROCEDURES

To apply to the Automotive Technician program, please submit the following documents to the MSTC Admissions Office:

1. Complete an MSTC application form and return it with the \$30 non-refundable application fee.
2. Complete the Accuplacer or ACT test. Minimum scores required:
 - Reading-Accuplacer score of 55
 - Sentence Skills-Accuplacer score of 60
 - Math-Accuplacer score of 34
 - ACT equivalents for above scores are acceptable.

You may take the Accuplacer again if you did not meet the required scores. Additional options, including coursework and tutoring, are also available to assist you. Contact the Student Affairs Office on your local campus to learn about your options. To schedule an Accuplacer test, contact your local Campus Office.

Written Communication, courses in mathematics, and some science courses have placement requirements. Please refer to the course description section in the back of the catalog, listed under General Education, for course specific information.

3. Submit an official copy of all academic transcripts, including high school, college or university, and HSED/GED.

**Mid-State Technical College
Admissions
500 32nd Street North
Wisconsin Rapids, WI 54494**

Protective Clothing

Students are required to purchase three "MSTC Automotive Student" uniform shirts. These shirts will be available the first week of class for approximately \$30 each. Students are also required to wear safety glasses at all times in the lab. Acquiring safety glasses is the responsibility of the student.

Required Equipment

Students need to purchase a Fluke 177 or Fluke 88V multimeter and test lead set before the start of the second semester. They are available for purchase through the campus Book Store for approximately \$270.

PROGRAM COURSE DESCRIPTIONS

**10462114 // 3 credits
Metals & Machining**

A two-part class which introduces the basics of metal science and machine shop practice. Metallurgical concepts of steel and iron production, properties of metals, testing of metals, carbon and its role, heat-treating, steel designations, and cast iron and non-ferrous metals are introduced. Students will participate in lab exercises examining the properties of metal, an introduction to machine shop practices of safety, measurement, and machining through the use of hand tools, drilling machines, saws, and engine lathes. Students will be introduced to those concepts by both classroom presentation and hands-on shop experiences.

Prerequisite: Admission to Automotive Technician 324042, Diesel & Heavy Equipment Technician 324121, Industrial Mechanical Technician 104621, Instrumentation & Control Engineering Technology 106054, or Welding 314421 programs

**10462116 // 3 credits
Metal Fabrication**

An introduction to structural steel and plate fabrication, sheet metal fabrication, and basic electric arc and oxyacetylene welding. Fabrication techniques, metal selection, layout, cutting, bending, drilling, threading, and joining will be presented. Information will be presented to the student followed by lab activities to provide a hands-on experience. Emphasis will be placed on developing an understanding of tools, techniques, safe work habits, and the application of metal fabrication skills.

Prerequisite: Admission to Automotive Technician 324042, Diesel & Heavy Equipment Technician 324121, Industrial Mechanical Technician 104621, Instrumentation & Control Engineering Technology 106054, Welding 314421, or Machine Tool Technician 324201 programs

**10605108 // 2 credits
Intro to Electronics**

This course presents a survey of electricity and electronics which includes lab activities and is designed for persons wishing to learn some of the basics of electricity and electronics. It is an excellent refresher course to get back into electronics or improve a skills list. The course is intended for persons where electronics has become a part of their regular occupation and a need exists to identify various electronic components and perform basic tests using test equipment such as multimeters and oscilloscopes. The course covers concepts and applications of DC and AC electricity, semiconductor components, and digital devices using basic math skills.

**32404307 // 5 credits
Suspension & Steering Systems**

Highlighted in this course will be an analysis of construction and working principles of chassis components. Included will be frames, suspension systems, steering gears and linkages, wheels and tires, and wheel alignment. Special attention will be given to products used in servicing chassis components.

Prerequisite: Admission to Automotive Technician 324042 program

**32404308 // 5 credits
Braking Systems-Automotive**

Fundamentals of vehicle braking systems including drum and disc on hydraulic and air systems are studied. Power and anti-skid systems are included with emphasis on troubleshooting and component replacement and reconditioning.

Prerequisite: Admission to Automotive Technician 324042 program

CURRICULUM

Term		(17 credits)
10605108	Intro to Electronics	2
10804107	College Mathematics	3
32404307	Suspension & Steering Systems	5
32404308	Braking Systems-Automotive	5
32404375	Service Practices in Transportation Industry	2

Term		(15 credits)
10462114	Metals & Machining	3
32404311	Electrical Systems-Auto	5
32404324	Engine Repair	5
32404330	Applied Fluid Power	2

Term		(17 credits)
10462116	Metal Fabrication	3
31809351	Applied Human Relations	2
32404323	Automatic Transmissions	5
32404325	Manual Transmissions	5
32806351	Applied Science	2

Term		(17 credits)
31801351	Occupational Communication	2
32404312	Advanced Electrical Systems-Auto	5
32404320	Hybrid Systems-Auto	1
32404322	Heating/Air Conditioning	3
32404326	Fuel Control System-Auto	5
32404376	Advanced Drivability-Auto	1

Total Credits 66

Please Note:

- The Automotive Technician program has an August start date. We advise you to meet with an academic advisor or counselor to successfully plan your academic schedule.
- This curriculum sequence is only for student planning. Actual student schedules will vary depending on course availability.
- Degree completion time may vary based on student scheduling and course availability.
- For General Education course descriptions (800 level), see section marked under Course Descriptions.

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32404311 // 5 credits

Electrical Systems-Auto

This is the study of construction, function, and principles of operation of starting motors, charging systems, and controls. Basic electronics including capacitance, inductance, series and parallel circuits, magnetism and Ohm's Law, wiring schematics, soldering techniques, and use of diagnostic equipment are covered. Vehicle control and accessory systems will be studied.

Corequisite: Intro to Electronics 10605108

32404312 // 5 credits

Advanced Electrical Systems-Auto

Theory, operational fundamentals, diagnosis, and repair of vehicle electronic/electrical systems including computer self-diagnosis, scanners, analyzers, sensors, actuators, and computerized ignitions are studied in this course. Also covered are diagnostic and repair procedures on major electrical-electronic emission control systems.

Corequisite: Electrical Systems-Auto 32404311

32404320 // 1 credit

Hybrid Systems-Auto

This course includes a general overview of hybrid vehicle systems including motor, inverter, and CVT operation. Also included is an overview of hybrid safety requirements and demonstration of proper high voltage lockout procedures.

Corequisites: Automatic Transmissions 32404323, Advanced Electrical Systems-Auto 32404312, and Fuel Control Systems-Auto 32404326

32404322 // 3 credits

Heating/Air Conditioning

This course will provide an introduction to vehicle air conditioning systems. System components, operating characteristics, component testing, diagnosis, and repair will be covered in detail for popular system types. Coverage will include servicing of engine cooling systems as well as diagnosis and servicing of vehicle heating systems.

Prerequisite: Admission to Automotive Technician 324042 or Diesel & Heavy Equipment Technician 324121 programs

32404323 // 5 credits

Automatic Transmissions

This course will provide coverage of vehicle automatic transmission diagnosis and repair. Course emphasis will include gear systems, operating principles, component diagnosis, maintenance and adjustment, and servicing of transaxle system components.

Prerequisites: Electrical Systems-Auto 32404311 and Applied Fluid Power 32404330

32404324 // 5 credits

Engine Repair

This course will provide a general overview of engine types and operating characteristics. Course emphasis will include the diagnosis and repair of cylinder heads, valve train components, and engine blocks and related components. Engine support systems such as the lubrication systems, cooling system, ignition system, and fuel and exhaust systems will also be covered.

Prerequisite: Admission to Automotive Technician 324042 program

32404325 // 5 credits

Manual Transmissions

This course will provide coverage of manual transmission problem diagnosis and repair. Study will include clutch, drive shaft, and universal joint diagnosis and servicing. Additional topics will include rear axle servicing as well as four-wheel drive diagnosis and repair.

Corequisite: Automatic Transmissions 32404323

32404326 // 5 credits

Fuel Control System-Auto

This course will provide an introduction to vehicle ignition systems, fuel systems, air induction systems, emission control systems, and engine electrical systems. Course emphasis will focus on problem diagnosis, component testing, and repairs for domestic as well as import vehicles. A review of engine operation and related servicing will also be provided.

Prerequisite: Admission to Automotive Technician 324042 program

32404330 // 2 credits

Applied Fluid Power

Covers basic principles and application of pumps, compressors, motors, valves, seals, packing, and conductors. Students learn the advantage of hydraulic and pneumatic systems, as well as the physical properties of liquids and air. The intent is to identify various parts of a circuit and to illustrate standard liquid power components through laboratory experiments.

Prerequisite: Admission to Automotive Technician 324042, Diesel & Heavy Equipment Technician 324121, or Machine Tool Technician 324201 programs

32404375 // 2 credits

Service Practices in Transportation Industry

This course introduces the student to common tools, terminology, and service practices in the transportation service field. Safety, environmental concerns, and basic customer relations will also be covered. Service shop management practices and the use of automated work order, parts ordering, and time management concepts are included.

Prerequisite: Admission to Automotive Technician 324042 or Diesel & Heavy Equipment Technician 324121 programs

32404376 // 1 credit

Advanced Drivability-Auto

This course will provide students with hands-on practical experience in powertrain diagnosis. This course builds on the basic skills and system theory gained in previous courses.

Prerequisites: Automatic Transmissions 32404323, Advanced Electrical Systems-Auto 32404312, and Fuel Control Systems-Auto 32404326