AUTOMOTIVE TECHNICIAN

Technical Diploma
Program Code: 32-404-2
Total Credits: 59

Mid-State's Automotive Technician program gives students the experience and skills they need to diagnose and repair today's vehicles. The program emphasizes engine and transmission repair, the drive train and axles, suspension and steering systems, brakes, electrical systems, heating and air conditioning, and engine performance. You'll receive instruction from industry experts and have access to state-of-the-art equipment, including a variety of hand and power tools and complex electrical diagnostic equipment. Hands-on learning and opportunities to diagnose and repair cars for real customers will have you ready to enter the workforce with confidence.

Estimated tuition and fees: mstc.edu/programcosts

ACADEMIC ADVISOR

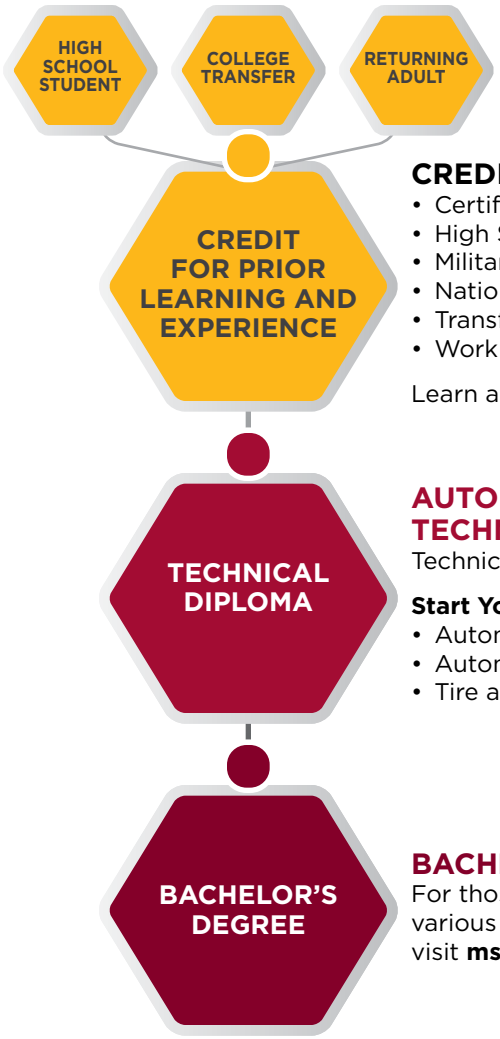
To schedule an appointment with an academic advisor, call 715.422.5300. Academic advisors will travel to other campuses as necessary to accommodate student needs. For more information about advising, visit **mstc.edu/advising**.

NEW STUDENT CHECKLIST

Complete the following steps to prepare for your New Student Advising appointment with your academic advisor:

- ❑ Submit a Mid-State application at **mstc.edu/apply**.
- ❑ Send official transcripts to:
  Mid-State Technical College
  Student Services
  1001 Centerpoint Drive
  Stevens Point, WI 54481
- ❑ Complete the Free Application for Federal Student Aid (FAFSA) at **fafsa.gov**. Mid-State's Financial Aid team is available to assist with your FAFSA application and to answer your financial aid questions. Contact Financial Aid or schedule an appointment at **mstc.edu/financial-aid**.
- ❑ Set up student MyCampus account at **mstc.edu/mycampus-assistance**.
- ❑ Schedule a New Student Advising appointment at **mstc.edu/advising**.

CAREER PATHWAY • BEGIN AT ANY POINT



CREDIT FOR PRIOR LEARNING AND EXPERIENCE

- Certifications and Licenses
- High School Credit
- Military Experience
- National/Standardized Exams
- Transfer Credit
- Work and Life Experience

Learn about Credit for Prior Learning at **mstc.edu/cpl**.

AUTOMOTIVE MAINTENANCE TECHNICIAN

Technical Diploma • 27 Credits

Start Your Career

- Automotive Apprentice
- Automotive Parts Sales/Service
- Tire and Lube Technician

AUTOMOTIVE TECHNICIAN

Technical Diploma • 59 Credits

Start Your Career

- Automotive and Light Truck Technician
- Automotive Master Mechanic
- Engine Technician

BACHELOR'S DEGREE OPTIONS

For those interested in continuing their education, Mid-State offers transfer agreements with various four-year colleges and universities. For more information and additional opportunities, visit **mstc.edu/transfer**.

OTHER OPTIONS

RELATED PROGRAMS

- Diesel & Heavy Equipment Technician
- Diesel & Heavy Equipment Technician Assistant

OUTCOMES

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

- Demonstrate professionalism appropriate for the auto service industry.
- Perform diagnosis, service, and repair of automotive internal combustion engines.
- Perform diagnosis, service, and repair of automotive automatic transmission/transaxle systems.
- Perform diagnosis, service, and repair of automotive manual drive train and axle systems.
- Perform diagnosis, service, and repair of automotive steering and suspension systems.
- Perform diagnosis, service, and repair of automotive brake systems.
- Perform diagnosis, service, and repair of automotive electrical and electronic systems.
- Perform diagnosis, service, and repair of automotive heating and air conditioning systems.
- Perform diagnosis, service, and repair of automotive engine performance systems.

TECHNICAL SKILLS ATTAINMENT

The Wisconsin Technical College System (WTCS) has implemented a requirement that all technical colleges measure outcomes attained by students. This requirement is called Technical Skills Attainment (TSA). The main objective of TSA is to ensure graduates have the technical skills needed by employers. Students are notified of TSA reporting in the Service Practices and Fuel Control Systems courses.

This program meets the requirements for Master Automobile Service Technology Accreditation, the highest level of program accreditation recognized by the National Institute for Automotive Service Excellence (ASE).

PROTECTIVE CLOTHING

Students are required to purchase three "Mid-State Automotive Technician Student" uniform shirts. These shirts are available the first week of class for approximately $30 each. Students are also required to wear safety glasses at all times in the lab. Acquisition of 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 term. These are available for purchase through the campus Bookstore for approximately $270.

STUDENT HANDBOOK

Visit **mstc.edu/studenthandbook** to view Mid-State's student handbook, which contains information about admissions, enrollment, appeals processes, services for people with disabilities, financial aid, graduation, privacy, Mid-State's Student Code of Conduct, and technology.

GRADUATION REQUIREMENT

The GPS for Student Success course is required for all Mid-State program students and is recommended to be completed before obtaining 12 credits. (Not counted in the total credit value for this program.) Some students are exempt from this requirement. Please see your program advisor for more information.

GPS for Student Success
10890102 .....1 credit
Integrate necessary skills for student success by developing an academic plan, identifying interpersonal attributes for success, adopting efficient and effective learning strategies, and utilizing Mid-State resources, policies, and processes. This course is recommended to be completed prior to obtaining 12 credits and is a graduation requirement unless you receive an exemption from your program advisor.

ADDITIONAL COURSES AS NEEDED

The following courses may be recommended or required if the student does not achieve minimum Accuplacer scores.

College Reading and Writing 1
10831104 .....3 credits
Provides learners with opportunities to develop and expand reading and writing skills to prepare for college-level academic work. Students will employ critical reading strategies to improve comprehension, analysis, and retention of texts. Students will apply the writing process to produce well-developed, coherent, and unified written work.

Pre-Algebra
10834109 .....3 credits
Provides an introduction to algebra. Includes operations on real numbers, solving linear equations, percent and proportion, and an introduction to polynomials and statistics. Prepares students for elementary algebra and subsequent algebra-related courses.

SAMPLE FULL-TIME CURRICULUM OPTION

Term		17 credits
10457119	Fabrication Fundamentals 1	1
31442320	Welding Foundations 1 ✎	1
31442321	Welding Foundations 2	1
31804305	Applied Mathematics	2
32404307	Suspension & Steering Systems ✎	5
32404308	Braking Systems-Automotive ✎	5
32404340	Intro to Electricity for the Automotive Industry ✎	1
32404375	Service Practices in Automotive Industry ✎	1

Term		12 credits
32404311	Electrical Systems-Auto	5
32404324	Engine Repair	5
32404330	Applied Fluid Power ✎	2

Term		15 credits
32404313	Electric Control Systems	2
31801368	Workplace Communication	1
32404323	Automatic Transmissions	5
32404325	Manual Transmissions	5
32806351	Applied Science	2

Term		15 credits
32404312	Advanced Electrical Systems-Auto	5
32404320	Hybrid Systems-Auto	1
32404322	Heating/Air Conditioning	3
32404326	Fuel Control System-Auto	5
32404377	Business Practices in the Transportation Industry	1

Total credits 59

✎ This course has options available to receive credit for prior learning (CPL) or work experience. Visit the website at **mstc.edu/cpl** or contact your advisor for details.

Please Note:
- This curriculum sequence is only for student planning. Actual student schedules will vary depending on course availability.
- Program completion time may vary based on student scheduling and course availability. For details, go to **mstc.edu/schedule**.

SAMPLE PART-TIME CURRICULUM OPTION

Term		7 credits
32404307	Suspension & Steering Systems ✎	5
32404340	Intro to Electricity for the Automotive Industry ✎	1
32404375	Service Practices in Automotive Industry ✎	1

Term		7 credits
32404311	Electrical Systems-Auto	5
32404330	Applied Fluid Power ✎	2

Term		7 credits
32404308	Braking Systems-Automotive ✎	5
31442320	Welding Foundations 1 ✎	1
31442321	Welding Foundations 2	1

Term		6 credits
10457119	Fabrication Fundamentals 1	1
32404324	Engine Repair	5

Term		9 credits
31804305	Applied Mathematics	2
32404323	Automatic Transmissions	5
32806351	Applied Science	2

Term		8 credits
32404312	Advanced Electrical Systems-Auto	5
32404322	Heating/Air Conditioning	3

Term		8 credits
32404313	Electric Control Systems	2
31801368	Workplace Communication	1
32404325	Manual Transmissions	5

Term		7 credits
32404320	Hybrid Systems-Auto	1
32404326	Fuel Control System-Auto	5
32404377	Business Practices in the Transportation Industry	1

Total credits 59

MULTIPLE MEASURES	
Multiple Measures Writing (MMW): High school GPA of 2.6 and successful completion of 2.0 credits of high school writing courses with a "C" or better	**Multiple Measures Reading (MMR):** High school GPA of 2.6 and successful completion of 2.0 credits of high school literature courses with a "C" or better
Multiple Measures Math 1 (MMM_1): High school GPA of 2.6 and successful completion of 1.0 credits of high school math (Algebra 1 or equivalent) with a "C" or better	**Multiple Measures Math 2 (MMM_2):** High school GPA of 2.6 and successful completion of 2.0 credits of high school math including Algebra 1 and Algebra 2 with a "C" or better
Multiple Measures Science 1 (MMS_1): High school GPA of 2.6 and successful completion of 1.0 credits of high school lab science course with a "C" or better	**Multiple Measures Science 2 (MMS_2):** High school GPA of 2.6 and successful completion of 1.0 credits of high school chemistry with a "C" or better

Past high school and college transcripts are used in making course placement decisions.

COURSE DESCRIPTIONS

Advanced Electrical Systems-Auto
32404312 .....5 credits
Learners employ theory and operational fundamentals to diagnose and repair vehicle electronic/electrical systems, including computer self-diagnosis, scanners, analyzers, sensors, actuators, and computerized ignitions. Also covers diagnostic and repair procedures on major electrical-electronic emission control systems.
Corequisite: Electrical Systems-Auto 32404311

Applied Fluid Power
32404330 .....2 credits
Learners employ basic principles and application of pumps, compressors, motors, valves, seals, packing, and conductors to demonstrate 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.

Applied Mathematics
31804305.....2 credits
Students taking Applied Mathematics make and convert various measurements. Students use formulas to solve problems. They compute dimensions of geometric shapes. Students use statistical tools to represent and analyze data. They analyze various financial situations. Students use basic right triangle trigonometry to solve problems. In each topic area, students solve application problems.

Applied Science
32806351 .....2 credits
This survey course in basic physics is designed for students in the Automotive Technician, Diesel & Heavy Equipment Technician, and Precision Machining Technician programs. Topics have been specially selected to provide students with basic support material for principles applied in the above listed programs. Topics to be covered include basic measurement skills; problem solving; motion; forces and energy transfer in linear and rotary systems; properties of solids, liquids and gases; temperature and heat; and basic DC electricity.

Automatic Transmissions
32404323 .....5 credits
Learners practice automatic transmission diagnosis and repair. Topics include gear systems, hydraulic and electronic control systems, transmission servicing, in vehicle repair, and out of vehicle transmission overhaul.
Prerequisites: Electrical Systems-Auto 32404311 and Applied Fluid Power 32404330

Braking Systems-Automotive
32404308.....5 credits
Learners employ fundamentals of vehicle braking systems including drum, disc, hydraulic and air systems to perform on-vehicle repairs. Includes instruction on power and anti-skid systems with emphasis on troubleshooting and component replacement and reconditioning.

Business Practices in the Transportation Industry
32404377 .....1 credit
Provides learners with hands on experience completing repair orders, customer service and parts management. Students will learn from instructors, local shop owners and professionals in the industry. Topics covered will include shop management, insurance and worker's compensation considerations, warranties, and pricing systems.
Corequisite: Fuel Control System-Auto 32404326

Electrical Systems-Auto
32404311.....5 credits
Learners employ principles of construction, function, and operation of starting motors, charging systems, and controls. Covers basic electronics, including capacitance, inductance, series and parallel circuits, magnetism and Ohm's Law, wiring schematics, soldering techniques, and use of diagnostic equipment. Vehicle control and accessory systems are studied.
Prerequisite: Intro to Electricity for the Automotive Industry 32404340

Electric Control Systems
32404313 .....2 credits
Introduces learners to fundamental electronic control programming logic, terminology, and design. Learners practice basic programming and digital control techniques complete control tasks that are analogous to control tasks found in modern automobiles.
Prerequisite: Applied Mathematics 3184305.

Engine Repair
32404324 .....5 credits
Learners practice diagnosis, reconditioning and repair of cylinder heads, valve train components, and engine blocks and related components. Provides a general overview of engine types and operating characteristics. Covers engine support systems such as the lubrication systems, cooling system, ignition system, fuel and exhaust systems.
Corequisite: Electrical Systems-Auto 32404311.

Fabrication Fundamentals 1
10457119.....1 credit
An introduction to structural shapes and sheet metal fabrication. Presents fabrication techniques, metal selection, and layout, cutting, bending, drilling, threading, and joining using manual equipment and techniques. Information is presented to the student and followed up with lab activities to provide a hands-on experience. Emphasizes developing an understanding of the tools, techniques, safe work habits, and application of sheet metal fabrication skills.

Fuel Control System-Auto
32404326 .....5 credits
Learners identify and diagnose vehicle ignition systems, fuel systems, air induction systems, emission control systems, and engine electrical systems. Focuses on fault diagnosis, component testing, and repairs for domestic as well as import vehicles. Includes a review of engine operation and related servicing.

COURSE DESCRIPTIONS

Heating/Air Conditioning
32404322 .....3 credits
Provides an introduction to vehicle air conditioning systems. System components, operating characteristics, component testing, diagnosis, and repair are covered in detail for popular system types. Includes servicing of engine cooling systems as well as diagnosis and servicing of vehicle heating systems.

Hybrid Systems-Auto
32404320 .....1 credit
Learners receive a general overview of hybrid vehicle systems, including motor, inverter, and CVT operation. Also provides an overview of hybrid safety requirements and demonstration of proper high voltage lockout procedures.
Prerequisite: Automatic Transmissions 32404323; Corequisites: Advanced Electrical Systems-Auto 32404312 and Fuel Control Systems-Auto 32404326

Intro to Electricity for the Automotive Industry
32404340 .....1 credit
Introduces learners to electrical measurement tools and techniques. Includes both hands-on experience and theory on topics including multimeter operation, Ohm's law, wiring diagram interpretation, and circuit testing. Content is focused on tools and procedures commonly used in automotive, and diesel/heavy equipment industries. Learners will have the opportunity to earn NC3 multimeter certification during this course.

Manual Transmissions
32404325 .....5 credits
Learners practice manual drivetrain fault diagnosis and repair. Topics includes clutch, drive shaft, and universal joint diagnosis and servicing. Additional topics include rear axle servicing and four-wheel drive diagnosis and repair.
Corequisite: Automatic Transmissions 32404323

Service Practices in Automotive Industry
32404375 .....1 credit
Introduces the learner to common tools, terminology, and service practices in the transportation field. Covers safety, environmental concerns, and basic customer relations. Service shop management practices and the use of automated work order, parts ordering, and time management concepts are included.

Suspension & Steering Systems
32404307 .....5 credits
Analyze construction and working principles of chassis components. Includes frames, suspension systems, steering gears and linkages, wheels and tires, and wheel alignment. Learners practice on-vehicle diagnosis and repair of suspension and steering systems.

Welding Foundations 1
31442320 .....1 credit
An introduction to fundamental welding techniques with an emphasis on safe work habits that covers the processes of FCAW, GMAW, and OXY-Fuel cutting. Classroom instruction pared with lab activities are designed to provide fundamental skills in each of the welding processes covered in the class.

Welding Foundations 2
31442321 .....1 credit
An introduction to fundamental welding techniques with an emphasis on safe work habits that covers the processes of GTAW, SMAW and Plasma cutting. Classroom instruction pared with lab activities are designed to provide fundamental skills in each of the welding processes covered in the class.

Workplace Communication
31801368 .....1 credit
Analyze workplace communication situations to develop professional verbal and written communication skills. Learners apply verbal and written communication skills, as well as conflict resolution strategies, to improve workplace communication climates and promote personal and professional growth.