

Automotive Technology

Program Number: 10-602-3

Associate in Applied Science Degree

Transportation Program Cluster

Center for Construction, Manufacturing, Apprenticeship & Transportation

Program offered at Madison Campuses

For information call: (608) 246-6102 or
(800) 322-6282 Ext. 6102

About the Program

Employment opportunities for automotive technicians include all aspects of automotive sales and service businesses. In the automotive service business, technicians and service writers are needed. With proper background and experience, advancement to shop foreman, service manager and other highly responsible positions is possible. Other employment opportunities include working in manufacturing as an engineering aid or as a sales representative for manufacturers of automotive tools and equipment or operating your own auto repair business.

Requirements for Graduation

66 credits with a GPA of 2.0 (C) or above. 2.0 (C) or above for all 602 courses.

Curriculum

FIRST YEAR		Hrs/week	
First Semester		Credits	Lec-Lab
10-602-102	Service Repair Procedures*	4	3-14
10-602-119	Automotive Electronics	3	1-2
10-602-156	Comfort Control Systems	2	1-2
10-602-166	Powertrain Management Technology*	5	4-14
10-804-110	Elementary Algebra w/ Applications	3	3-0
Semester Total		17	

Second Semester			
10-420-126	Manufacturing Materials	2	1-2
10-602-157	Technical Braking Systems*	4	2-12
10-602-163	Technical Suspension and Steering*	4	2-12
10-801-195	Written Communication	3	3-0
10-809-199	Psychology of Human Relations	3	3-0
Semester Total		16	

SECOND YEAR

First Semester			
10-602-153	Manual Drivetrain and Axles**	3	2-13
10-602-154	Fluid Power Transmission***	5	2-13
10-602-162	Automobile Accessories	2	1-3
10-806-139	Survey of Physics	3	2-2
10-809-195	Economics	3	3-0
Semester Total		16	

Second Semester			
10-602-150	Internal Combustion Engines*	4	4-11
10-602-152	Driveability Analysis*	4	4-11
10-602-158	Service Management	3	3-0
10-801-197	Technical Reporting	3	3-0
10-806-134	General Chemistry	4	3-9
Semester Total		18	

*Meets for 9 weeks.

**Meets for 6 weeks.

***Meets for 12 weeks.

Note: Students are placed in English or mathematics courses based on their scores on the COMPASS or ASSET test or on completion of the appropriate prerequisite/s.

Notes:

COMPASS test required upon program acceptance.

College transfer courses available in lieu of existing courses (200 series) for individuals who desire continuing education. Always check receiving institution prior to enrollment.

- Safety procedures required in all labs.
- Prerequisites can be waived with center approval.
- Consult with the Faculty Director regarding advanced standing.
- Certain associate degree or higher post-secondary courses specific to the curriculum may substitute for courses upon approval of center dean.

Program Courses

10-602-102 Service Repair Procedures 5 credits

Automobile engine theory, design and operation are studied. Other studies included are the diagnosis and repair procedures of the engine cooling, lubricating and exhaust systems. Batteries, starting and charging systems are covered in detail along with the proper use of meters and the latest test equipment. Shop safety and proper use of hand tools is emphasized.

10-602-119 Automotive Electronics 3 credits

Because of the rapid advancement of electrical/electronic controls and systems within the contemporary automobile, the need for more advanced training of these systems is essential. Upcoming technicians within the service industry must become better acquainted with the application of and diagnostic approaches to this complex subject area. Every system within the current and upcoming production vehicles will be electronically controlled or will be, at the very least, heavily influenced by this constantly evolving technology. This course will study the science of basic electricity through the application of advanced electronic controls. Sound basic diagnostic practices are studied and practiced in the laboratory setting.

10-602-150 Internal Combustion Engines 4 credits

The internal combustion automotive engine is studied in detail by discussion, demonstration and laboratory experiments. The latest machining equipment is used to accurately diagnose, disassemble, repair, and reassemble an automobile engine. Diagnosis of engine related mechanical problems is covered. Prerequisite: Service Repair Procedures, 10-602-102, Powertrain Management Technology, 10-602-166 or consent of instructor.

10-602-152 Driveability Analysis 4 credits

Practical application of principles, concepts and diagnostic abilities covered in the 2 prerequisite courses. Advanced electrical/electronic diagnostic applications will reinforce prior competency development. Prerequisites: Service Repair Procedures, 10-602-102, Powertrain Management Technology, 10-602-166 or consent of instructor.

10-602-153 Manual Drivetrain and Axles 3 credits

The operation and theory of clutches, transaxles, standard transmissions, drivelines and differentials are covered. Areas of emphasis include diagnosis, repair, testing and periodic maintenance as recommended by major manufacturers. Classroom and shop time is utilized to develop skills in diagnosis and repair of clutches, drivelines and differentials. Prerequisite: Service Repair Procedures, 10-602-102 or consent of instructor.

10-602-154 Fluid Power Transmission 5 credits

The operation and theory of hydraulically and electronically controlled automatic transmissions are studied. Diagnosis, repair, testing and periodic maintenance as recommended by major manufacturers are emphasized. Classroom and shop time are utilized to develop skills in diagnosis and repair of automatic transmissions. Prerequisite: Service Repair Procedures, 10-602-102 or consent of instructor.

10-602-156 Comfort Control Systems 2 credits

Study includes basic principles of refrigeration and air conditioning including the component parts that make up the A/C units on passenger cars and light trucks. Heating and automatic temperature control are also studied. Students will receive State of Wisconsin AG 136.09 certification upon completion of this course. Prerequisite: completion or concurrent enrollment in Service Repair Procedures, 10-602-102 or consent of instructor.

10-602-157 Technical Braking Systems 4 credits

Topics include principles of drum and disc brake designs, inspection and diagnosis. Covers wheel and tire diagnosis and repair. Steering and suspension safety inspection is covered. Lab experiences including inspecting, troubleshooting and the repair and replacement of defective or worn parts of the complete brake system. The use of correct procedure and tools is stressed. Prerequisite: Service Repair Procedures, 10-602-102.

10-602-158 Service Management 3 credits

The principles of various types of business organizations are examined and applied to automotive wholesale and retail businesses, ultimately focusing on the automobile as part of the service department. Service department operation is covered in detail and depth from large organizations to small organizations. The conventional line method of management is stressed. Employment possibilities and job interviewing techniques are discussed. Prerequisite: Service Repair Procedures, 10-602-102 and Manual Drivetrain and Axles, 10-602-153 or consent of instructor.

10-602-162 Accessories 2 credits

Examines equipment supplied by both major manufacturers of automobiles and after-market suppliers. Classroom and lab activities help students to understand basic electricity, electric circuits and use of test equipment to troubleshoot problems in circuits such as lighting, windshield wipers, power windows, instruments and cruise control. Prerequisite: Service Repair Procedures, 10-602-102 or consent of instructor.

10-602-163 Technical Suspension & Steering 4 credits

Principles of suspension designs, wheel alignment angles, inspection procedures, parts replacement, steering systems, shock absorbers/struts, sway bars and frame design. On-the-job experiences include inspecting and correcting suspension angles, parts replacement, adjusting steering gears. Covers four-wheel alignment. Prerequisite: Service Repair Procedures, 10-602-102.

10-602-166 Powertrain Management Technology 5 credits

All engine operating systems are studied: engine breathing, ignition systems, computer control and sensors, fuel and air management and emission systems. Students learn how these systems operate, how to test for proper operation of systems and components, and how to use test equipment. Prerequisite: Service Repair Procedures, 10-602-102 (first nine weeks).

10-420-126 Manufacturing Materials 2 credits

Instructional units include safety, oxy-acetylene welding, brazing and cutting, shielded metal arc welding, gas metal arc welding, gas tungsten arc welding, flux cored arc welding, plasma arc cutting and conventional machining.

AG 136/EPA Certification

For more information on this four-hour course, call (608) 246-6822 or 243-4169.

Career Potential:

- Service Writer
- Diagnostic Specialist
- Service Manager
- Specialized Technician
- Equipment Sales
- Equipment Service and Training Technician
- Service Director
- Lab Technician
- Shop Owner
- Fleet Manager

More detailed and updated information on this program may be available at: matcmadison.edu. The college reserves the right to make changes in the regulations and courses announced in this publication without notice.

Madison Area Technical College provides equal opportunity in education and employment.

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