

Automotive Mechanics Technology

Careers & Technology

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DEGREE

A.A. —Automotive Mechanics Technology



CERTIFICATES OF ACHIEVEMENT

Automotive Mechanics Technology
Automotive Engine Performance
Welding Certificate (see welding)



CERTIFICATES OF PROFICIENCY

Automatic Transmissions/Transaxles
Automotive Brakes
Automotive Electrical Systems
Automotive Engine Repair
Automotive Heating & Air Conditioning
Automotive Suspension & Steering
Automotive Emission Control
Small Engine Repair



Program Description

The Automotive Mechanics Technology program emphasizes developing skills required for efficient diagnosis, maintenance, and repair of the automobile and its components. This program and its instructors are Automotive Service Excellence (ASE) certified.

The college offers both theoretical and practical training relating to all phases of the automobile. Upon successful completion of the program, students are qualified for placement as technicians in the auto industry. Students may apply units earned by successful completion of Automotive Mechanics Technology courses to one or more of the specialized certificates and/or the associate's degree in Automotive Mechanics Technology.

The Automotive Student Service Education Training Program (ASSET), offered in conjunction with Ford Motor/Mazda Company, is incorporated into this degree program. Contact the ASSET Coordinator at (916) 691-7391 for specific program information. To enroll in ASSET automotive courses, interested students must first submit an application and be accepted in the ASSET program.

Career Opportunities

Auto Technician	Automotive Microcomputer
Tune-up & Electrical Specialist	Programmer & Operator
Inventory Controls Manager	Field Service/Sales Representative
Auto/Truck Specialist	

ASE certified in the areas of Brakes, Electrical/Electronic Systems, Engine Performance, Suspension and Steering, Automatic Transmission/Transaxle, Engine Repair, Heating and Air Conditioning, and Manual Drive Train and Axles

Highlights

- Weekend courses in Smog Certification and other automotive topics.
- 8-week courses to allow completion of certificate in only one year
- One of the best equipped shops in Northern California for hands-on training
- Graduates routinely pass ASE and State Smog Certification exams
- A facility chosen as part of the GM, Ford and Chrysler Technical Training Network
- ASE Certified Instructors, Programs and Certificates
- Class sizes with an excellent teacher/student ratio
- Ford ASSET Program

NOTE TO TRANSFER STUDENTS:

If you are interested in transferring to a four-year college or university to pursue a bachelor's degree in this major, it is critical that you meet with a CRC counselor to select and plan the courses for your major. Schools vary widely in terms of the required preparation. The courses that CRC requires for an associate's degree in this major may be different from the requirements needed for the bachelor's degree.

For information about the student learning outcomes for this program, see <http://www.crc.losrios.edu/pslo>

DEGREE

A.A.—Automotive Mechanics Technology

CODE #1028

REQUIRED PROGRAM.....Units	
AMT 301	Automotive Service Management.....3
AMT 304	Automotive Manual Drive Train and Axles3
AMT 302	Automotive Electrical/Electronic Systems3
AMT 306	Small Engine Repair or
AMT 310	Engine Performance3
AMT 314	Wheel Alignment3
AMT 316	Automotive Brakes.....3
AMT 320	Automotive Ignition Systems3
AMT 322	Engine Repair.....3
AMT 324	Electronic Fuel Injection3
AMT 330	Automatic Transmissions/Transaxles.....3
AMT 332	Automotive Computerized Controls or
AMT 334	Ford Electronic Engine Control 3-5
AMT 340	Basic/Enhanced Area Clean Air Car Course.....7
TOTAL UNITS REQUIRED	40-42

Suggested Electives:

AMT 300, 310, 312, 326, 498;
BUS 105; ADT 300.

NOTE: *Students completing the FORD ASSET program must also complete AMT 300, 312, 326 and Welding 294. In addition, 5 units of Work Experience and a total of 1000 sponsored work hours must be completed. AMT 301, 306, and 332 are not required in ASSET.*

G.E. Graduation Requirements for this degree - see pages 20-21

General Focus: Courses in the general program are designed to emphasize skills development in efficient diagnosis, maintenance, and repair of the automobile. A wide variety of makes and models of vehicles are used in laboratory practice. Students can enter the General Program in Automotive Mechanics Technology at any semester, Summer, Fall, or Spring. Certificate programs as well as an A.A. degree in Automotive Mechanics Technology are available.

ASSET Focus: Courses in the Ford/Mazda ASSET program are part of a 2-year sequence of classes designed to prepare people to enter Ford dealerships as automotive technicians. Only Ford/Mazda products are included in the laboratory portions of these courses. Entry into the program occurs once a year in the Fall semester and students must be sponsored by a Ford/Mazda or Lincoln Mercury dealership. Students spend 2 years full-time in the program in staggered classroom and work experience segments. The process of application to this program includes taking CRC assessment exams, assembling a job search portfolio, attending a counseling appointment and resume/interview workshops, interviewing with the ASSET instructor, and obtaining employment with a sponsoring dealership. All courses in the ASSET program are taken from the specific Ford perspective. For more program and application information, call (916) 691-7391.

CERTIFICATE OF PROFICIENCY

Automotive Brakes

CODE #1029

This curriculum is designed for students interested in seeking employment in the repair and installation of automotive brakes systems.

REQUIRED PROGRAM.....Units	
AMT 300	Automotive Fundamentals and Shop Procedures4
AMT 302	Automotive Electrical/Electronic Systems3
AMT 316	Automotive Brakes.....3
AMT 332	Automotive Computerized Controls.....3
TOTAL UNITS REQUIRED.....	13

CERTIFICATE OF PROFICIENCY

Automotive Electrical Systems

CODE #1030

This curriculum is designed for students interested in seeking employment in the diagnosis and repair of automotive electrical systems.

REQUIRED PROGRAM.....Units	
AMT 300	Automotive Fundamentals and Shop Procedures4
AMT 302	Automotive Electrical/Electronic Systems3
AMT 320	Automotive Ignition Systems3
AMT 332	Automotive Computerized Controls.....3
TOTAL UNITS REQUIRED	13

CERTIFICATE OF PROFICIENCY

Automotive Engine Repair

CODE #1031

This curriculum is designed for students interested in seeking employment in the engine overhaul and engine repair field.

REQUIRED PROGRAM.....Units	
AMT 300	Automotive Fundamentals and Shop Procedures4
AMT 306	Small Engine Repair.....3
AMT 322	Engine Repair.....3
Plus three (3) units selected from:.....3	
Any other Automotive Mechanics Technology course	
TOTAL UNITS REQUIRED	13

CERTIFICATE OF PROFICIENCY

Automotive Heating and Air Conditioning

CODE #1032

This curriculum is designed for students interested in seeking employment in the automotive heating and air conditioning repair/installation field.

REQUIRED PROGRAM.....Units	
AMT 300	Automotive Fundamentals and Shop Procedures4
AMT 302	Automotive Electrical/Electronic Systems3
AMT 326	Automotive Heating & Air Conditioning3
Plus three (3) units selected from:.....3	
Any other Automotive Mechanics Technology course	
TOTAL UNITS REQUIRED.....	13

CERTIFICATE OF PROFICIENCY**Small Engine Repair**

CODE #1036

This curriculum is designed for students who are interested in obtaining skills necessary for the repair of small engines used in industry, home maintenance, landscape maintenance and recreation.

REQUIRED PROGRAM	Units
AMT 302 Automotive Electrical/Electronic Systems	3
AMT 306 Small Engine Repair	3
AMT 324 Electronic Fuel Injection	3
Plus three (3) units selected from:	3
Any other Automotive Mechanics Technology course	
TOTAL UNITS REQUIRED	12

CERTIFICATE OF PROFICIENCY**Automatic Transmissions/Transaxles**

CODE #1034

This curriculum is designed for students interested in seeking employment in the diagnosis and repair of automatic transmissions/transaxles.

REQUIRED PROGRAM	Units
AMT 300 Automotive Fundamentals and Shop Procedures	4
AMT 302 Automotive Electrical/Electronic Systems	3
AMT 304 Automotive Manual Drive Trains and Axles.....	3
AMT 330 Automatic Transmissions/Transaxles	3
TOTAL UNITS REQUIRED	13

CERTIFICATE OF ACHIEVEMENT**Automotive Engine Performance**

CODE #1035

This curriculum is designed for students who are interested in seeking employment in the tune-up and diagnosis field. Students may continue with another Automotive certificate or AA without repeating these courses.

REQUIRED PROGRAM	Units
AMT 302 Automotive Electrical/Electronic Systems	3
AMT 320 Automotive Ignition Systems	3
AMT 306 Small Engine Repair or	
AMT 322 Engine Repair.....	3
AMT 310 Engine Performance.....	3
AMT 324 Electronic Fuel Injection	3
AMT 332 Automotive Computerized Controls (3) or	
AMT 340 Basic/Enhanced Area Clean Air Car Course (7)	3-7
TOTAL UNITS REQUIRED	18-22

CERTIFICATE OF ACHIEVEMENT**Automotive Mechanics Technology**

CODE #1028

This one-year curriculum is designed for students who are seeking basic job entry skills for employment in the automotive field. Students may continue with another Automotive certificate or AA without repeating these courses.

REQUIRED PROGRAM	Units
AMT 301 Automotive Service Management.....	3
AMT 302 Automotive Electrical/Electronic Systems	3
AMT 304 Automotive Manual Drive Train and Axles	3
AMT 306 Small Engine Repair	3
AMT 314 Wheel Alignment	3
AMT 316 Automotive Brakes.....	3
AMT 320 Automotive Ignition Systems	3
AMT 322 Engine Repair.....	3
AMT 324 Electronic Fuel Injection.....	3
AMT 330 Automatic Transmissions/Transaxles	3
AMT 332 Automotive Computerized Controls.....	3
AMT 340 Basic/Enhanced Area Clean Air Car Course.....	7
TOTAL UNITS REQUIRED	40

CERTIFICATE OF PROFICIENCY**Automotive Suspension and Steering**

CODE #1033

This curriculum is designed for students interested in seeking employment in the automotive suspension, steering or wheel alignment fields.

REQUIRED PROGRAM	Units
AMT 302 Automotive Electrical/Electronic Systems	3
AMT 300 Automotive Fundamentals and Shop Procedures	4
AMT 314 Wheel Alignment	3
AMT 332 Automotive Computerized Controls.....	3
TOTAL UNITS REQUIRED	13

CERTIFICATE OF PROFICIENCY**Automotive Emission Control**

CODE #1365

REQUIRED PROGRAM	Units
AMT 302 Automotive Electrical/Electronic Systems	3
AMT 310 Engine Performance or	
AMT 324 Electronic Fuel Injection.....	3
AMT 332 Automotive Computerized Controls.....	3
AMT 340 Basic/Enhanced Area Clean Air Car Course.....	7
TOTAL UNITS REQUIRED	16

NOTE:

1. A current advanced emission control smog license will meet the requirement for AMT 340.
2. ASE (Automotive Service Excellence) Certification in A6, A8, and L1 will meet requirements for AMT 302, 310, 332.
3. No units will be earned for requirements met through licensing or certification exams. In these cases fewer total units are required.

AUTOMOTIVE MECHANICS TECHNOLOGY (AMT)

AMT 140

Automotive Service

1 Unit

Prerequisite: None

Advisory: AMT 300

Hours: 15 hours LEC ; 9 hours LAB

A short-term course designed to enable students to gain skills in a specialized automotive area and to assist the student in preparation for state license requirements when applicable. Some of the service system topics that may be scheduled include: brakes, charging, ignition, alignment, disc brakes, automatic transmission, air conditioning and management. Students may receive one unit of credit for each topic area. Consult class schedule for specific topics being offered.

AMT 294

Topics in Automotive Mechanics Technology .5-4 Units

Prerequisite: None

Hours: 72 hours LEC ; 54 hours LAB

This course covers special topics not included in current automotive offerings in a timely manner. Topics may be offered in workshops or seminar presentations on timely subjects or targeted for specific audiences. This course may be taken four or more times for credit on different topics in order to meet an employer mandated training requirement.

AMT 295

Independent Studies in Automotive Mechanics Technology

1-3 Units

Prerequisite: None

Hours: 18 hours LEC ; 54 hours LAB

AMT 299

Experimental Offering in Automotive Mechanics Technology

.5-4 Units

Prerequisite: None

Hours: 18 hours LEC ; 54 hours LAB

AMT 300

Automotive Fundamentals and Shop Procedures 4 Units

Prerequisite: None

Course Transferable to CSU

Hours: 72 hours LEC

A basic study of the mechanical operations of the automobile directed toward the principles and operation of the automotive engine, engine support systems, the drive train, steering, suspension and brakes. Hand tools, shop equipment and shop procedures will be demonstrated to familiarize the students with the automotive industry.

AMT 301

Automotive Service Management

3 Units

Prerequisite: None

Course Transferable to CSU

Hours: 54 hours LEC

This course provides a survey of automotive service operations, management strategies, economic importance, regulatory responsibilities, customer relations, and employment opportunities in the automotive service industry.

AMT 302

Automotive Electrical/Electronic Systems

3 Units

Prerequisite: None

Advisory: AMT 300

Course Transferable to CSU

Hours: 36 hours LEC ; 54 hours LAB

This course is a study of the fundamental principles of electricity as used by the auto technician. Construction and function of automotive electrical/ electronic components will be discussed, as will storage batteries, charging and cranking systems, lighting, and accessory systems.

AMT 304

Automotive Manual Drive Train and Axles

3 Units

Prerequisite: None

Advisory: AMT 300

Course Transferable to CSU

Hours: 36 hours LEC ; 54 hours LAB

This course covers the principles of operations of automotive power trains, including diagnosis and overhaul techniques of clutches, manual transmission/ transaxles, transfer cases, drive lines and differentials.

AMT 305

Survey of Alternative Fueled & Hybrid Vehicles

3 Units

Prerequisite: None

Course Transferable to CSU

Hours: 54 hours LEC

This course will provide the students with resources and relevant information about the technologies of alternative fueled, electric and hybrid vehicle powertrains, as well as the impacts of their wider application in society. While the course will have a technical component, the larger focus of the course is targeted at both the automotive and non-automotive student. Access to a computer with Internet capabilities will be necessary for this course.

AMT 306

Small Engine Repair

3 Units

Prerequisite: None

Advisory: AMT 300

Course Transferable to CSU

Hours: 36 hours LEC ; 54 hours LAB

Operation and repair of two- and four-cycle engines. Emphasis on design and theory of various types of internal combustion engines.

AMT 308**Late Model Car Care and Maintenance****3 Units***Prerequisite: None**Course Transferable to CSU**Hours: 54 hours LEC*

This course is designed for the service technician and late model car owner wishing to perform or schedule car maintenance. This course will provide both men and women with basic automotive repair procedures and a fundamental understanding of how various automotive components and systems work. Use of the owner's manual, repair orders and other resources will be emphasized along with the development of a preventative maintenance schedule.

AMT 310**Engine Performance****3 Units***Prerequisite: None**Advisory: AMT 302 or 306**Course Transferable to CSU**Hours: 36 hours LEC ; 54 hours LAB*

This course covers basic principles of the internal combustion engine and its related components, with an emphasis on complete electrical and fuel systems. The course will include the use of advanced types of testing equipment.

AMT 312**Automotive Suspension and Steering****3 Units***Prerequisite: None**Advisory: AMT 300**Course Transferable to CSU**Hours: 36 hours LEC ; 54 hours LAB*

Principles of operation of automotive steering, power steering, frames, springs, exhaust systems, acetylene welding, shock absorbers and tires.

AMT 314**Wheel Alignment****3 Units***Prerequisite: None**Course Transferable to CSU**Hours: 36 hours LEC ; 54 hours LAB*

An in-depth examination of alignment equipment and different auto manufacturer's alignment systems. Will cover wheel balancing and front end steering and wheel alignment, diagnosis and repair.

AMT 316**Automotive Brakes****3 Units***Prerequisite: None**Advisory: AMT 300**Course Transferable to CSU**Hours: 36 hours LEC ; 54 hours LAB*

This course covers the principles of operation of automotive brakes and anti-lock brake systems, including diagnosis and overhaul techniques of power brake system components.

AMT 320**Automotive Ignition Systems****3 Units***Prerequisite: None**Advisory: AMT 300 and 302**Course Transferable to CSU**Hours: 36 hours LEC ; 54 hours LAB*

A thorough examination of the automotive ignition system, including its function, primary circuit, secondary circuit, diagnosis of electrical troubles, and assembly and repair of equipment including distributorless ignition systems.

AMT 322**Engine Repair****3 Units***Prerequisite: None**Advisory: AMT 300 and 306**Course Transferable to CSU**Hours: 36 hours LEC ; 54 hours LAB*

The theory of operation and repair of the automotive internal combustion engine. Major emphasis will be on diagnosis, measurement, repair and assembly of the automotive engine.

AMT 324**Electronic Fuel Injection****3 Units***Prerequisite: None**Advisory: AMT 300, 302, or 310**Course Transferable to CSU**Hours: 36 hours LEC ; 54 hours LAB*

Techniques and procedures for diagnosis, overhaul and service of electronic fuel injection. Accessories including different types of electronic fuel injection systems and test equipment. Principles of operation of special equipment such as super-charger and turbo-chargers.

AMT 326**Automotive Heating and Air Conditioning****3 Units***Prerequisite: None**Advisory: AMT 302**Course Transferable to CSU**Hours: 36 hours LEC ; 54 hours LAB*

This course is a study of installation, operation and repair of automotive air conditioning systems, cooling systems, and heating systems. The course will include a study of the systems for proper functioning including heat transfer and air flow.

AMT 330**Automatic Transmissions/Transaxles****3 Units***Prerequisite: None**Advisory: AMT 300 and 304**Course Transferable to CSU**Hours: 36 hours LEC ; 54 hours LAB*

This course is a study of the fundamentals and theory of automatic transmissions/ transaxles. The laboratory experience will include inspection, diagnosis and adjustments.

AMT 332
Automotive Computerized Controls **3 Units**

Prerequisite: None
Advisory: AMT 302
Course Transferable to CSU
Hours: 54 hours LEC

The study of automotive computerized controls and their application to the engine, chassis and braking systems. Students will learn how the computer interacts with the functioning parts of the modern automobile.

AMT 334
Ford Electronic Engine Control (EEC IV and V) **5 Units**

Prerequisite: None
Advisory: AMT 302 and 332, enrollment in the ASSET program
Course Transferable to CSU
Hours: 90 hours LEC

This is an advanced course specializing in Ford Electronic Engine Controls.

AMT 336
Advanced Service Management **3 Units**

Prerequisite: None
Advisory: AMT 300
Course Transferable to CSU
Hours: 54 hours LEC

This course is a thorough examination of automotive service management. The course includes workflow process, dispatching, customer write-ups, warranties, customer handling, automotive law, hazardous waste, and employee hiring skills.

AMT 340
Basic/Enhanced Area Clean Air Car Course **7 Units**

Prerequisite: None
Advisory: AMT 310 or 324, and AMT 302 and 332
Course Transferable to CSU
Hours: 126 hours LEC

This course includes testing, diagnosis, and service of all automotive emission control systems. Included in the course are the eight hours of training required by the Bureau of Automotive Repair for technicians to perform Loaded Mode Emission testing in impacted areas of the state. The course is required for all students who plan to become licensed as test-only technicians, intern diagnostic technicians, basic or advanced test and repair technicians. Upon successful completion of this course, students are eligible for a BAR Intern License, Test-Only Technician License, and may be eligible for a Basic or Advanced Emission Test and Repair License. Course may be taken two times for credit. (Note: Eligibility for Clean Air Course Certification requires one of the following before entry into this course: 9 units in engine performance or 180 hours of documented engine performance education/training or 1 year of verifiable full time engine performance work (or combination).

AMT 495
Independent Studies in
Automotive Mechanics Technology **1-3 Units**

Prerequisite: None
Course Transferable to CSU
Hours: 18 hours LEC ; 54 hours LAB

AMT 498
Work Experience in
Automotive Mechanics Technology **1-4 Units**

Prerequisite: None
Course Transferable to CSU
Hours: 300 hours LAB

This course provides students with opportunities to develop marketable skills in preparation for employment or advancement within their current job. Course content will include understanding the application of education to the workforce; completion of required forms, which document the student's progress and hours spent at the work site; and developing workplace skills and competencies. During the course of the semester, the student is required to fulfill an 18 hour orientation and 75 hours of related paid work experience, or 60 hours of unpaid work experience for one unit. An additional 75 or 60 hours of related work experience is required for each additional unit. The course may be taken again when there is new or expanded learning on the job for a maximum of 16 units.

AMT 499
Experimental Offering in
Automotive Mechanics Technology **.5-4 Units**

Prerequisite: None
Course Transferable to CSU
Hours: 18 hours LEC ; 54 hours LAB