

AUTOMOTIVE TECHNOLOGY

Automobile and Light Truck Technology

Automotive Technology, a career technical program, provides the theoretical background and practical experience necessary to gain entry-level employment or advancement in the automotive technology industry as career-ready practitioners. The program has a contract with Toyota Motor North America that provides students with vehicles & training aides, diagnostic equipment, and a dealer network that helps with job placement. The program offers courses that lead to an associate degree in Automotive Technology as well as to certificates of achievement in Automotive Service, Diagnosis, and Repair—Master Technician; Automotive Service, Diagnosis, and Repair—Toyota/Lexus/Scion Technician; Automotive Service, Diagnosis, and Repair—Undercar/Drivetrain Specialist; Automotive Service, Diagnosis, and Repair—Underhood Specialist; Clean Energy and Vehicle Electrification Technology; and Maintenance and Light Repair.

Medium & Heavy-Duty Diesel Truck Technology

Medium and Heavy-Duty Truck Technology (<http://www.citruscollege.edu/academics/programs/mtrk/>), a career technical program, provides the theoretical background and practical experience necessary to gain entry-level employment and/or advancement as heavy duty truck, bus, and heavy equipment technicians. Courses lead to an associate degree in Medium and Heavy-Duty Diesel Truck Technology and/or certificates of achievement in Diesel Engine Service, Diagnosis and Repair Technician, Medium and Heavy-Duty Truck Service, Diagnosis, and Repair Master Technician and Stationary Power Generation Service, Diagnosis and Repair Technician.

Faculty

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Learning Outcomes

This discipline prepares students to do the following:

- Acquire skills pertinent to industry-level national certification exams in the transportation industry.
- Exit the program with a personal/professional commitment to uphold the high standards and uplift the integrity of the automotive industry.
- Utilize knowledge acquired in the Automotive Technology Program to maximize employment potential in the industry through successful completion of course level outcomes.

Courses

AUTO 100

Automotive Technology and Maintenance for the Consumer
3 Units (AA/AS; CSU)

54 lecture hours, 18 lab hours

Grade Mode: Pass/No Pass, Standard Letter

Strongly recommended: ENGL 101.

Intended for non-majors. Automobiles and light trucks will be explained from the point of view of the consumer. Operation of essential automotive technologies is central to the course goal of skill development in the inspection of various automobile systems for needed repairs and/or maintenance performed by the end-user. Appropriate lab activities in automobile inspection, service and repair are included.

AUTO 101**Fundamentals of Automotive Service, Diagnosis and Repair****6 Units (AA/AS; CSU)****90 lecture hours, 60 lab hours****Grade Mode: Standard Letter***Strongly recommended: ENGL 101.*

Intended for automotive majors, this class serves as the prerequisite for all automotive certificate and/or degree-applicable courses. Automobiles and light trucks will be explored from the point of view of the service technician. Scientific principles and operation of essential automotive technologies are central to the course goal of preparing students for entry into the automotive core curriculum. Appropriate lab activities in automobile inspection, service and repair are included. A valid California driver license is required for this course.

AUTO 140A**Vehicle Maintenance****4 Units (AA/AS)****54 lecture hours, 54 lab hours****Grade Mode: Pass/No Pass, Standard Letter***Strongly recommended: ENGL 101; Integrated Math 3 or Algebra 1.*

Intended for the incumbent worker, re-entry person or person seeking a career change into the automotive service industry. This course is intended to be the beginning course in the Maintenance and Light Repair (MLR) curriculum. This course is focused on developing workplace skills that will allow a student to competently perform a detailed multi-point inspection and conduct fluid maintenance on select vehicle subsystems. Appropriate lab activities are included.

AUTO 141**Engine Mechanical Maintenance and Light Repair****2 Units (AA/AS)****27 lecture hours, 27 lab hours****Grade Mode: Pass/No Pass, Standard Letter***Strongly recommended: AUTO 140A or minimum one year industry experience.*

Intended for the incumbent worker, re-entry person or person seeking a career change into the automotive service industry. This course is part of the Maintenance and Light Repair (MLR) curriculum. This course covers essential engine theory, inspection, diagnosis, service and repair. Engine inspection and measurements are covered, with emphasis on in-vehicle repairs.

AUTO 144**Automotive Chassis MLR****4 Units (AA/AS; CSU)****54 lecture hours, 54 lab hours****Grade Mode: Pass/No Pass, Standard Letter***Strongly recommended: ENGL 101; MATH 144; AUTO 140A or one year of employment as automotive technician.*

Intended for the incumbent worker, re-entry person or person seeking a career change into the automotive service industry. This course is part of the Maintenance and Light Repair (MLR) curriculum. The course covers essential chassis system theory; inspection, diagnosis, service and repair of the following undercar systems: Steering, suspension, alignment, wheels and tires. Course prepares students for ASE Suspension and Steering (A4) certification.

AUTO 145**Automotive Brakes Maintenance and Light Repair****3 Units (AA/AS)****36 lecture hours, 54 lab hours****Grade Mode: Pass/No Pass, Standard Letter***Strongly recommended: ENGL 101; MATH 144; AUTO 140A or one year of employment as automotive technician.*

Intended for the incumbent worker, re-entry person or person seeking a career change into the automotive service industry. This course is part of the Maintenance and Light Repair (MLR) curriculum. This course is focused on developing workplace skills that will allow a student to competently perform detailed brake inspections and repairs on disc, drum and parking brake systems. Appropriate lab activities are included.

AUTO 146**Automotive Electrical Systems****4 Units (AA/AS; CSU)****54 lecture hours, 54 lab hours****Grade Mode: Pass/No Pass, Standard Letter***Strongly recommended: ENGL 101; MATH 144; AUTO 140A or one year of employment as automotive technician.*

Intended for the incumbent worker, re-entry person or person seeking a career change into the automotive service industry. This course is part of the Maintenance and Light Repair (MLR) curriculum. This course covers essential electrical and electronic systems theory, along with inspection, diagnosis, service & repair of specific electrical systems including the battery, starting systems, charging systems, lighting systems, gauges, instrument-panel warning lights and power accessories. Prepares students for ASE Electrical & Electronic Systems (A6) certification.

AUTO 147**Automotive Heating, Ventilation and Air Conditioning MLR****2 Units (AA/AS)****27 lecture hours, 36 lab hours****Grade Mode: Pass/No Pass, Standard Letter***Strongly recommended: ENGL 101; Integrated Math 3 or Algebra 1; AUTO 146 or one year of employment as automotive technician.*

Intended for the incumbent worker, re-entry person or person seeking a career change into the automotive service industry. This course is part of the the Maintenance and Light Repair (MLR) curriculum. The course covers essential HVAC system theory; inspection, maintenance and light repair. Course prepares students for ASE HVAC (A7) certification and portions of the G1 certification.

AUTO 148**Engine Performance Maintenance and Light Repair****4 Units (AA/AS; CSU)****54 lecture hours, 54 lab hours****Grade Mode: Pass/No Pass, Standard Letter***Strongly recommended: ENGL 101; MATH 144; AUTO 146 or one year of employment as automotive technician.*

Intended for the incumbent worker, re-entry person or person seeking a career change into the automotive service industry. This course is part of the Maintenance and Light Repair (MLR) curriculum. The course covers essential engine management system theory, along with inspection, diagnosis, service and repair of the following systems: Ignition, air and fuel delivery, electronic engine controls, and auxiliary emission controls. Course prepares students for ASE Engine Performance (A8) certification.

AUTO 149**Diesel Engine Management Systems****4 Units (AA/AS; CSU)****54 lecture hours, 54 lab hours****Equivalent to: MTRK 159, MTRK 179****Grade Mode: Pass/No Pass, Standard Letter***Strongly recommended: ENGL 101; Integrated Math 3 or Algebra 1; AUTO 148 or AUTO 168.*

Intended for Automotive and Medium/Heavy Truck students, this course covers the theory of operation of 4-stroke diesel engines along with the theory of operation, testing and inspection, and service repair of air-inlet systems (including forced induction), exhaust systems, fuel-delivery systems (including mechanical and electronic engine controls), and emission-control systems. Course prepares students for ASE A9 certification.

AUTO 151**Engine Service, Diagnosis and Repair****6 Units (AA/AS; CSU)****54 lecture hours, 167 lab hours****Grade Mode: Standard Letter***Prerequisite(s): AUTO 101.*

Intended for those seeking a career in the automotive service and repair industry. This ASE Education Foundation (formerly NATEF) certified course is one component of the Toyota Technical Education Network and Technicians' Education Cooperative programs. The course covers essential engine theory, inspection, diagnosis, service and repair. Engine disassembly, inspection, measurements and assembly are covered, with emphasis on in-vehicle repairs. The course prepares students for ASE Engine Repair (A1) certification exam. A valid driver's license is required for this course.

AUTO 154**Chassis Service, Diagnosis, and Repair****9 Units (AA/AS; CSU)****108 lecture hours, 162 lab hours****Grade Mode: Standard Letter***Prerequisite(s): AUTO 166.*

Intended for those seeking a career in the automotive service and repair industry. This Automotive Service Excellence Education Foundation certified course is one component of the Toyota Technician Training and Education Network (T-TEN) program. The course covers essential chassis system theory, along with inspection, diagnosis, service and repair of the following undercar systems: brake, steering, suspension, wheel alignment, wheels & tires, ride control, and VSC. Course prepares students for ASE Suspension and Steering (A4) and ASE Brakes (A5) certification.

AUTO 156**Automotive Electrical & Electronic Systems I****6 Units (AA/AS; CSU)****72 lecture hours, 108 lab hours****Grade Mode: Standard Letter***Prerequisite(s): AUTO 101.*

Intended for those seeking a career in the automotive service and repair industry, this ASE Education Foundation (formerly NATEF) certified course is one component of the Toyota Technical Education Network and Technicians' Education Cooperative programs. This class covers essential electrical and electronic systems theory, along with inspection, diagnosis, service & repair of specific electrical systems including the battery, starting systems, charging systems, and accessory systems. Prepares students for ASE Electrical & Electronic Systems (A6) certification.

AUTO 163**Manual Drivetrain****4.5 Units (AA/AS; CSU)****54 lecture hours, 81 lab hours****Grade Mode: Pass/No Pass, Standard Letter***Prerequisite(s): AUTO 154.*

Course covers the theory of operations, diagnosis, and repair of manual transmissions, drive axle and shaft assemblies, transfer cases, clutches, and electrical and electronic systems. Emphasis is placed on rebuilding manual transmissions, rebuilding and set-up of differential, and R & R clutch assemblies. Course prepares students for the ASE A-3, Manual Drivetrain, and Axles.

AUTO 166**Automotive Electrical & Electronic Systems II****4 Units (AA/AS; CSU)****36 lecture hours, 108 lab hours****Grade Mode: Standard Letter***Prerequisite(s): AUTO 156.*

Intended for those seeking a career in the automotive service and repair industry. This Automotive Service Excellence Education Foundation certified course is one component of the Toyota Technical Education Network program. This class covers advanced electrical and electronic systems theory, along with inspection, diagnosis, service and repair of specific accessory and safety systems including supplemental restraint, navigation, entertainment, power windows/locks/doors/seats, customizable body electronics, multiplex systems, and driver-assist systems. This course prepares students for the ASE Electrical and Electronic Systems (A6) certification.

AUTO 167**Automotive HVAC Service, Diagnosis & Repair****4.5 Units (AA/AS; CSU)****45 lecture hours, 108 lab hours****Grade Mode: Standard Letter***Prerequisite(s): AUTO 166.*

Intended for those seeking a career in the automotive service and repair industry. This National Automotive Technicians' Education Foundation certified course is one component of the Toyota Technical Education Network and Technicians' Education Cooperative programs. This class covers essential heating, ventilation and air conditioning system theory, along with inspection, diagnosis, service and repair of specific HVAC subsystems including: refrigeration, air distribution and automatic temperature control. This course prepares students for ASE Heating and Air Conditioning (A7) certification.

AUTO 168**Engine Control Systems Service, Diagnosis and Repair****8.5 Units (AA/AS; CSU)****108 lecture hours, 135 lab hours****Grade Mode: Standard Letter***Prerequisite(s): AUTO 151 and AUTO 166.**Strongly recommended: ENGL 101; Elementary algebra or higher or direct placement based on multiple measures.*

Intended for those seeking a career in the automotive service and repair industry. This National Automotive Technicians' Education Foundation certified course is one component of the Toyota Technical Education Network and Technicians' Education Cooperative programs. The course covers essential engine management systems theory, along with inspection, diagnosis, service and repair of the following systems: ignition, air and fuel delivery, electronic engine controls, and auxiliary emission controls. This course prepares students for ASE Engine Performance (A8) certification.

AUTO 172**Automatic Transmissions and Transaxles****6 Units (AA/AS; CSU)****72 lecture hours, 108 lab hours****Grade Mode: Pass/No Pass, Standard Letter***Prerequisite(s): AUTO 163; AUTO 168 or concurrent enrollment.*

Intended for those seeking a career in the automotive service and repair industry, this NATEF certified course is one component of the T-TEN and TEC programs. This course focuses on the service, diagnosis and repair of the automatic automotive drivetrain systems. Appropriate lab activities in automobile drivetrain inspection, service and repair are included.

The course prepares students for the ASE Automatic Transmission and Transaxle (A2) certification exam.

AUTO 190**Alternative Fuels for Internal Combustion Engines****4 Units (AA/AS; CSU)****54 lecture hours, 74 lab hours****Grade Mode: Pass/No Pass, Standard Letter***Prerequisite(s): AUTO 148 or AUTO 168 or MTRK 159 or with department consent.**Strongly recommended: ENGL 101; Integrated Math 3 or algebra.*

This course introduces students to the role, function, and application of compressed natural gas (CNG), propane (LPG), methanol, and ethanol as alternatives for today's usual internal combustion engine fuels. Emerging technology including other renewable fuel sources will also be discussed. Course prepares students to take the ASE F1 exam.

AUTO 191**Smog Check Inspector Training Level II****1.5 Units (AA/AS)****18 lecture hours, 27 lab hours****Grade Mode: Standard Letter***Strongly recommended: AUTO 148 or AUTO 168 or Level 1 smog training or ASE A6, A8 and L1.*

This training provides students the procedural knowledge, skills and abilities to perform Smog Check inspections. Students who complete and pass this training in conjunction with Level 1 training or ASE A6, A8 and L1 will meet the State's Bureau of Automotive Repair requirements to qualify to take the Smog Check Inspector state licensing examination.

AUTO 230A**Automotive Service and Repair Work Experience A****1 Unit (AA/AS)****9 lecture hours, 160 lab hours arranged****Equivalent to: AUTO 230****Grade Mode: Pass/No Pass, Standard Letter***Strongly recommended: Completion of 16 units in automotive technology coursework.**Limitation on enrollment: Department consent required prior to enrollment.*

Automotive technology work experience is designed to extend occupational learning through employment and coordinate the on-the-job training with program instruction. Individual student goals and learning objectives will be designed by the student cooperatively with the employer and faculty advisor. Lab hours are arranged and completed at the place of employment. The AUTO 230 A-D series of courses may be taken in any combination that yields four units. Pass/No Pass grading only.

AUTO 230B**Automotive Service and Repair Work Experience B****2 Units (AA/AS)****9 lecture hours, 320 lab hours arranged****Equivalent to: AUTO 230****Grade Mode: Pass/No Pass***Strongly recommended: Completion of 16 units in automotive technology coursework.**Limitation on Enrollment: Department consent required prior to enrollment.*

Automotive technology work experience is designed to extend occupational learning through employment and coordinate the on-the-job training with program instruction. Individual student goals and learning objectives will be designed by the student cooperatively with the employer and faculty advisor. Lab hours are arranged and completed at the place of employment. The AUTO 230 A-D series of courses may be taken in any combination that yields four units. Pass/No Pass grading only.

AUTO 230C**Automotive Service and Repair Work Experience C****3 Units (AA/AS)****9 lecture hours, 480 lab hours arranged****Equivalent to: AUTO 230****Grade Mode: Pass/No Pass***Strongly recommended: Completion of 16 units in automotive technology coursework.**Limitation on Enrollment: Department consent required prior to enrollment.*

Automotive technology work experience is designed to extend occupational learning through employment and coordinate the on-the-job training with program instruction. Individual student goals and learning objectives will be designed by the student cooperatively with the employer and faculty advisor. Lab hours are arranged and completed at the place of employment. The AUTO 230 A-D series of courses may be taken in any combination that yields four units. Pass/No Pass grading only.

AUTO 230D**Automotive Service and Repair Work Experience D****4 Units (AA/AS)****9 lecture hours, 640 lab hours arranged****Equivalent to: AUTO 230****Grade Mode: Pass/No Pass***Strongly recommended: Completion of 16 units in automotive technology coursework.**Limitation on Enrollment: Department consent required prior to enrollment.*

Automotive technology work experience is designed to extend occupational learning through employment and coordinate the on-the-job training with program instruction. Individual student goals and learning objectives will be designed by the student cooperatively with the employer and faculty advisor. Lab hours are arranged and completed at the place of employment. Pass/No Pass grading only.

AUTO 281**Advanced Toyota Technician Training****5 Units (AA/AS)****72 lecture hours, 54 lab hours****Grade Mode: Pass/No Pass, Standard Letter**

Prerequisite(s): Currently a full-time journeyman at a Toyota or Lexus dealership or at an independent repair facility with a minimum of two years experience or completion of 1080 hours of an ASE Education Foundation - Master certificated post-secondary automotive training program with at least 12 months of technician experience or successful completion of all requirements of the Automotive Service, Diagnosis and Repair - Toyota/Lexus/Scion Technician Certificate of Achievement except the 281 course. *Strongly recommended: ENGL 101 and MATH 144.*

An advanced-level course specifically designed to supplement core concepts with advanced diagnostic strategies. This course delves into automotive areas not traditionally explored in previous courses such as interior R&R, body noise diagnostics, vehicle integrated management systems and diagnostics, telematic systems, Toyota warranty standards and dealer expectations. Only individuals meeting the requirement of the T-TEN Professional Certificate or the current T-TEN students that have completed the NATEF core classes may attend.

AUTO 282**Hybrid and Electric Vehicle Technology****5 Units (AA/AS; CSU)****54 lecture hours, 108 lab hours****Grade Mode: Pass/No Pass, Standard Letter**

Prerequisite(s): AUTO 148 or AUTO 168 or one year of automotive industry experience with department consent.

Strongly recommended: ENGL 101; Integrated Math 3 or algebra.

Intended for the incumbent worker, re-entry person or person seeking a career advancement in the automotive service industry. This course covers the service and diagnosis of hybrid and electric vehicle powertrains, including motor/generator, batteries, inverters and charging system.

AUTO 283**Fuel-Cell Vehicle Technology****3 Units (AA/AS; CSU)****54 lecture hours****Grade Mode: Pass/No Pass, Standard Letter**

Prerequisite(s): AUTO 190 and AUTO 282.

Strongly recommended: ENGL 101; Integrated Math 1 or Algebra 1.

Intended for the incumbent worker, re-entry person or person seeking a career advancement in the automotive service industry. This course covers the service and diagnosis of fuel cell electric vehicle powertrains, including motor/generator, batteries, inverters and PEM fuel cell technology.

AUTO 291**Engine Performance Enhancements and Tuning****3 Units (AA/AS)****36 lecture hours, 54 lab hours****Grade Mode: Pass/No Pass, Standard Letter**

Prerequisite(s): AUTO 168 or consent of department.

Strongly recommended: ENGL 101.

This class covers the engine performance enhancements available for automobiles, light trucks and motorcycles. The subject areas covered include stand-alone engine management systems, fuel systems, turbochargers, superchargers, nitrous oxide, ignition systems, and the use of the chassis dynamometer as a tuning tool.

AUTO 295**Engine Design****4 Units (AA/AS; CSU)****72 lecture hours****Equivalent to: AUTO 260, AUTO 298****Grade Mode: Pass/No Pass, Standard Letter**

Strongly recommended: ENGL 101 and MATH 144 or higher.

A course designed to teach engine design principles and analysis of cylinder heads, cylinder blocks, crankshafts, piston and rings, connecting rods, camshaft, valve train systems. The course will also cover the use of basic and advanced engine design formulas.

AUTO 296**Cylinder Head Development****4 Units (AA/AS)****54 lecture hours, 54 lab hours****Equivalent to: AUTO 261****Grade Mode: Standard Letter**

Prerequisite(s): AUTO 151 or AUTO 295 or one year of work experience in the automotive field with an emphasis on engine machining or repair.

Strongly recommended: ENGL 101.

A course designed to teach the skills necessary to develop a cylinder head for total performance. Emphasis will be placed on cylinder head development and reconditioning, head CCing, and basic flowbench operation.

AUTO 297**Cylinder Block Development****4 Units (AA/AS)****54 lecture hours, 54 lab hours****Equivalent to: AUTO 262****Grade Mode: Pass/No Pass, Standard Letter**

Prerequisite(s): AUTO 151 or AUTO 295 or one year work experience in the automotive field with an emphasis on engine machining or repair.

Strongly recommended: ENGL 101.

A course designed to teach the skills necessary to develop and rebuild a cylinder block for total performance. Emphasis will be placed on cylinder block development and reconditioning, including operation of align-honing, surfacing, boring, honing machine operation and engine dynamic balancing.

AUTO 299**Engine Dynamometer Operation and Testing Procedures****2 Units (AA/AS)****18 lecture hours, 54 lab hours****Grade Mode: Standard Letter**

Prerequisite(s): AUTO 295 or one year experience in the automotive field with an emphasis on engine machining or chassis dynamometer operation.

Strongly recommended: ENGL 101.

This course covers engine dynamometer operation and testing procedures with evaluation of test results for performance tuning.

AUTO 695A**Special Topics: Automotive Technology****0.5 Units (AA/AS)****9 lecture hours****Grade Mode: Pass/No Pass, Standard Letter**

This course covers special and emerging topics not found in other courses within the discipline. Topics vary and are determined by the department. See the department for current term emphasis.

AUTO 695B**Special Topics: Automotive Technology****1 Unit (AA/AS)****18 lecture hours****Grade Mode: Pass/No Pass, Standard Letter**

This course covers special and emerging topics not found in other courses within the discipline. Topics vary and are determined by the department. See the department for current term emphasis.

AUTO 695C**Special Topics: Automotive Technology****2 Units (AA/AS)****36 lecture hours****Grade Mode: Pass/No Pass, Standard Letter**

This course covers special and emerging topics not found in other courses within the discipline. Topics vary and are determined by the department. See the department for current term emphasis.

AUTO 695D**Special Topics: Automotive Technology****3 Units (AA/AS)****54 lecture hours****Grade Mode: Pass/No Pass, Standard Letter**

This course covers special and emerging topics not found in other courses within the discipline. Topics vary and are determined by the department. See the department for current term emphasis.

AUTO 696A**Special Topics: Automotive Technology****0.5 Units (AA/AS)****27 lab hours****Grade Mode: Pass/No Pass, Standard Letter**

This course covers special and emerging topics not found in other courses within the discipline. Topics vary and are determined by the department. See the department for current term emphasis.

AUTO 696B**Special Topics: Automotive Technology****0.5 Units (AA/AS)****36 lab hours****Grade Mode: Pass/No Pass, Standard Letter**

This course covers special and emerging topics not found in other courses within the discipline. Topics vary and are determined by the department. See the department for current term emphasis.

AUTO 696C**Special Topics: Automotive Technology****1 Unit (AA/AS)****54 lab hours****Grade Mode: Pass/No Pass, Standard Letter**

This course covers special and emerging topics not found in other courses within the discipline. Topics vary and are determined by the department. See the department for current term emphasis.

AUTO 696D**Special Topics: Automotive Technology****1 Unit (AA/AS)****60 lab hours****Grade Mode: Pass/No Pass, Standard Letter**

This course covers special and emerging topics not found in other courses within the discipline. Topics vary and are determined by the department. See the department for current term emphasis.

AUTO 698A**Cooperative Education****1 Unit (AA/AS)****60 lab hours arranged****Grade Mode: Pass/No Pass, Standard Letter**

The student must be simultaneously enrolled in a class that relates to the Cooperative Education class. A course designed to assist students in planning and accomplishing meaningful learning objectives related to Automotive Technology at their place of volunteer employment or training sites.

AUTO 698B**Cooperative Education****2 Units (AA/AS)****120 lab hours arranged****Grade Mode: Pass/No Pass, Standard Letter**

The student must be simultaneously enrolled in a class that relates to the Cooperative Education class. A course designed to assist students in planning and accomplishing meaningful learning objectives related to Automotive Technology at their place of volunteer employment or training sites.

AUTO 698C**Cooperative Education****3 Units (AA/AS)****180 lab hours arranged****Grade Mode: Pass/No Pass, Standard Letter**

The student must be simultaneously enrolled in a class that relates to the Cooperative Education class. A course designed to assist students in planning and accomplishing meaningful learning objectives related to Automotive Technology at their place of volunteer employment or training sites.

AUTO 698D**Cooperative Education****4 Units (AA/AS)****240 lab hours arranged****Grade Mode: Pass/No Pass, Standard Letter**

The student must be simultaneously enrolled in a class that relates to the Cooperative Education class. A course designed to assist students in planning and accomplishing meaningful learning objectives related to Automotive Technology at their place of volunteer employment or training sites.

AUTO 699A**Cooperative Education****1 Unit (AA/AS)****75 lab hours arranged****Grade Mode: Pass/No Pass, Standard Letter**

The student must be simultaneously enrolled in a class that relates to the Cooperative Education class. A course designed to assist students in planning and accomplishing meaningful learning objectives related to Automotive Technology at their place of paid employment or training sites.

AUTO 699B**Cooperative Education****2 Units (AA/AS)****150 lab hours arranged****Grade Mode: Pass/No Pass, Standard Letter**

The student must be simultaneously enrolled in a class that relates to the Cooperative Education class. A course designed to assist students in planning and accomplishing meaningful learning objectives related to Automotive Technology at their place of paid employment or training sites.

AUTO 699C**Cooperative Education****3 Units (AA/AS)****225 lab hours arranged****Grade Mode: Pass/No Pass, Standard Letter**

The student must be simultaneously enrolled in a class that relates to the Cooperative Education class. A course designed to assist students in planning and accomplishing meaningful learning objectives related to Automotive Technology at their place of paid employment or training sites.

AUTO 699D**Cooperative Education****4 Units (AA/AS)****300 lab hours arranged****Grade Mode: Pass/No Pass, Standard Letter**

The student must be simultaneously enrolled in a class that relates to the Cooperative Education class. A course designed to assist students in planning and accomplishing meaningful learning objectives related to Automotive Technology at their place of paid employment or training sites.

MTRK 101**Introduction to Medium and Heavy Truck Maintenance and Inspection****6 Units (AA/AS; CSU)****90 lecture hours, 60 lab hours****Grade Mode: Pass/No Pass, Standard Letter***Strongly recommended: ENGL 101.*

Intended for students seeking a career in the medium and heavy duty truck service and repair industry, this course covers essential maintenance theory, along with inspection procedures of the following systems: Engine cooling and lubrication systems, power-train systems, brakes, steering and suspension systems. This course prepares students for entry into the medium and heavy duty truck technology program.

MTRK 148**Medium and Heavy Truck Maintenance and Inspection****6 Units (AA/AS; CSU)****90 lecture hours, 60 lab hours****Grade Mode: Pass/No Pass, Standard Letter***Strongly recommended: ENGL 101.*

Intended for students seeking a career in the medium and heavy duty truck service and repair industry, this course covers essential maintenance theory, along with inspection procedures of the following systems: cooling systems, lubrication systems, power-train systems, brakes, steering and suspension systems. This course prepares students for the Preventative Maintenance Inspection (T8) ASE certification.

MTRK 152A**Medium and Heavy Truck Engines Service, Diagnosis, and Repair****6 Units (AA/AS; CSU)****81 lecture hours, 81 lab hours****Equivalent to: MTRK 151****Grade Mode: Pass/No Pass, Standard Letter**

Prerequisite(s): MTRK 148 (or concurrent enrollment) or by department consent based upon individual's experience or ASE certifications or manufacturer certification.

Intended for those students majoring in Medium and Heavy Duty Truck or those currently employed with a medium and heavy truck service/repair establishment seeking to improve their skills. This course covers essential engine theory, inspection, diagnosis, service and repair. Engine inspection and measurements are covered, with emphasis on in-vehicle repairs. This course prepares students for ASE Truck Gas and Diesel Engine Repair (T-1, T-2) certification exam.

MTRK 156A**Medium/Heavy Truck Electrical/Electronic Systems I****5 Units (AA/AS; CSU)****72 lecture hours, 60 lab hours****Equivalent to: MTRK 156****Grade Mode: Standard Letter**

Prerequisite(s): MTRK 148 (or concurrent enrollment) or MTRK 101 (or concurrent enrollment) or AUTO 101 (or concurrent enrollment) or by department consent based upon individual's experience and ASE certifications or manufacturer certifications.

Strongly recommended: MATH 144.

Intended for those seeking a career in the medium and heavy duty truck service and repair industry, this is the first of the electrical series in the MTRK program. This class covers essential electrical and electronic systems theory, along with inspection, diagnosis, service and repair of specific electrical systems including the battery, starting systems, charging systems, lighting systems, gauges, and instrument-panel warning lights. Prepares students for ASE Electrical & Electronic Systems (T6) certification.

MTRK 156B**Medium/Heavy Truck Electrical/Electronic Systems II****4 Units (AA/AS; CSU)****54 lecture hours, 60 lab hours****Equivalent to: MTRK 166****Grade Mode: Pass/No Pass, Standard Letter**

Prerequisite(s): MTRK 156A or AUTO 156 or by department consent based upon individual's work experience and ASE certifications or manufacturer certifications.

Strongly recommended: MATH 144.

Intended for those seeking a career in the medium and heavy duty truck service and repair industry, course is one component of the MTRK program. This class covers advanced electrical and electronic systems theory, along with inspection, diagnosis, service and repair of specific accessory systems including supplemental restraint, navigation, entertainment, power windows/locks/seats, customizable body electronics, hybrid vehicle controls and multiplex systems. Prepares students for ASE Electrical and Electronic Systems (T6) certification.

MTRK 159**Diesel Engine Management Systems****5 Units (AA/AS; CSU)****72 lecture hours, 54 lab hours****Equivalent to: AUTO 149, MTRK 179****Grade Mode: Pass/No Pass, Standard Letter**

Prerequisite(s): AUTO 151 and AUTO 166 or MTRK 152A and MTRK 156B or by department consent based upon individual's experience or ASE certifications or manufacturer certification.

Strongly recommended: MATH 144.

Intended for Automotive and Medium/Heavy Truck students, this course covers the theory of operation of 4-stroke diesel engines along with the theory of operation, testing and inspection, and service repair of air-inlet systems (including forced induction), exhaust systems, fuel-delivery systems (including mechanical and electronic engine controls), and emission-control systems. Course prepares students for ASE A9 and/or T2 certification.

MTRK 160**Medium and Heavy Truck Hydraulics****3.5 Units (AA/AS; CSU)****54 lecture hours, 27 lab hours****Grade Mode: Pass/No Pass, Standard Letter**

Prerequisite(s): MTRK 156A or AUTO 156 or by department consent based upon individual's experience or ASE certifications or manufacturer certification.

Strongly recommended: MATH 144.

Intended for diesel technology majors, this course takes a practical approach to the understanding of fluid power and hydraulic systems. This course focuses on mobile vehicle hydraulic systems that require maintenance or troubleshooting. Coverage includes a study of terminology, industrial standards, symbols and basic circuitry design as related to hydraulic systems. Course will focus on heavy truck, earth-moving, and agricultural equipment.

MTRK 163**Medium and Heavy Truck Drivetrain Service, Diagnosis, and Repair****7 Units (AA/AS; CSU)****90 lecture hours, 108 lab hours****Equivalent to: MTRK 152, MTRK 172, MTRK 173****Grade Mode: Pass/No Pass, Standard Letter**

Prerequisite(s): MTRK 156B or AUTO 166 or by department consent based upon individual's experience and ASE certifications or manufacturer certifications.

Strongly recommended: MATH 144.

Intended for those seeking a career in the medium and heavy truck service and repair industry. This course focuses on the service, diagnosis and repair of the manual and automatic automotive drivetrain systems. Appropriate lab activities in medium/heavy truck drivetrain inspection, service and repair are included. The course prepares students for the ASE Drivetrain(T3) certification exams.

MTRK 164**Medium and Heavy Truck Chassis Service, Diagnosis and Repair****6 Units (AA/AS; CSU)****72 lecture hours, 112 lab hours****Equivalent to: MTRK 154****Grade Mode: Pass/No Pass, Standard Letter**

Prerequisite(s): MTRK 101 or MTRK 148, or by department consent based upon individual's experience or ASE certifications or manufacturer certification.

Intended for those seeking a career in the medium and heavy duty truck service and repair industry, this course covers essential chassis system theory, along with inspection, diagnosis, service & repair of the following systems: brake, steering, suspension, alignment, wheel/tire, and ABS. Course prepares students for ASE Suspension and Steering (T4) and ASE Brakes (T5) certification.

MTRK 167**Medium and Heavy Truck HVAC Service, Diagnosis & Repair****3 Units (AA/AS; CSU)****45 lecture hours, 51 lab hours****Grade Mode: Pass/No Pass, Standard Letter**

Prerequisite(s): MTRK 156A or AUTO 156 or by department consent based upon individual's experience and ASE certifications or manufacturer certifications.

Strongly recommended: MATH 144.

Intended for those seeking a career in the medium and heavy duty truck service and repair industry, this course is one component of the MTRK program. This class covers essential heating, ventilation and air conditioning system theory, along with inspection, diagnosis, service and repair of specific HVAC subsystems including: refrigeration, air distribution and automatic temperature control. Course prepares students for ASE Heating and Air Conditioning (T7) certification.

MTRK 698A**Cooperative Education****1 Unit (AA/AS)****60 lab hours arranged****Grade Mode: Pass/No Pass, Standard Letter**

Prerequisite(s): The student must be simultaneously enrolled in a class that relates to the Cooperative Education class.

A course designed to assist students in planning and accomplishing meaningful learning objectives related to diesel technology at their place of volunteer employment or training sites.

MTRK 698B**Cooperative Education****2 Units (AA/AS)****120 lab hours arranged****Grade Mode: Pass/No Pass, Standard Letter**

Prerequisite(s): The student must be simultaneously enrolled in a class that relates to the Cooperative Education class.

A course designed to assist students in planning and accomplishing meaningful learning objectives related to diesel technology at their place of volunteer employment or training sites.

MTRK 698C**Cooperative Education****3 Units (AA/AS)****180 lab hours arranged****Grade Mode: Pass/No Pass, Standard Letter**

Prerequisite(s): The student must be simultaneously enrolled in a class that relates to the Cooperative Education class.

A course designed to assist students in planning and accomplishing meaningful learning objectives related to diesel technology at their place of volunteer employment or training sites.

MTRK 698D**Cooperative Education****4 Units (AA/AS)****240 lab hours arranged****Grade Mode: Pass/No Pass, Standard Letter**

Prerequisite(s): The student must be simultaneously enrolled in a class that relates to the Cooperative Education class.

A course designed to assist students in planning and accomplishing meaningful learning objectives related to diesel technology at their place of volunteer employment or training sites.

MTRK 699A**Cooperative Education****1 Unit (AA/AS)****75 lab hours arranged****Grade Mode: Pass/No Pass, Standard Letter***Prerequisite(s): The student must be simultaneously enrolled in a class that relates to the Cooperative Education class.*

A course designed to assist students in planning and accomplishing meaningful learning objectives related to diesel technology at their place of paid employment or training sites.

MTRK 699B**Cooperative Education****2 Units (AA/AS)****150 lab hours arranged****Grade Mode: Pass/No Pass, Standard Letter***Prerequisite(s): The student must be simultaneously enrolled in a class that relates to the Cooperative Education class.*

A course designed to assist students in planning and accomplishing meaningful learning objectives related to diesel technology at their place of paid employment or training sites.

MTRK 699C**Cooperative Education****3 Units (AA/AS)****225 lab hours arranged****Grade Mode: Pass/No Pass, Standard Letter***Prerequisite(s): The student must be simultaneously enrolled in a class that relates to the Cooperative Education class.*

A course designed to assist students in planning and accomplishing meaningful learning objectives related to diesel technology at their place of paid employment or training sites.

MTRK 699D**Cooperative Education****4 Units (AA/AS)****300 lab hours arranged****Grade Mode: Pass/No Pass, Standard Letter***Prerequisite(s): The student must be simultaneously enrolled in a class that relates to the Cooperative Education class.*

A course designed to assist students in planning and accomplishing meaningful learning objectives related to diesel technology at their place of paid employment or training sites.

SPWG 170A**Power Systems 1****5 Units (AA/AS; CSU)****72 lecture hours, 60 lab hours****Equivalent to: MTRK 170A****Grade Mode: Standard Letter***Prerequisite(s): MTRK 159 or by department consent based off of experience and/or industry certification.**Strongly recommended: ENGL 101 and MATH 144.*

Intended for diesel technology students seeking a career in the power generation sector, this course is designed to introduce students to the field of electric power generation. Students will be provided with the knowledge and skills necessary to understand the theory and principles of diesel power generation. Included will be theories on DC and AC voltage systems in both the low voltage and high voltage applications with an emphasis on generator construction and operation. This course is designed to prepare students for the EGSA or CEP certifications.

SPWG 170B**Power Systems 2****5 Units (AA/AS; CSU)****72 lecture hours, 60 lab hours****Equivalent to: MTRK 170B****Grade Mode: Standard Letter***Prerequisite(s): SPWG 170A or by department consent based off of experience and/or industry certification.**Strongly recommended: ENGL 101 and MATH 144.*

Intended for diesel technology students seeking a career in the power generation sector, this course provides an in-depth study and hands-on activity in delivering, maintaining, troubleshooting and repairing current and legacy production Caterpillar Generator Sets operating as single units. This course is a continuation of the Power Generation series of courses designed to prepare students for the EGSA or CEP certifications.

SPWG 171**Advanced Power Systems Controls****4 Units (AA/AS; CSU)****54 lecture hours, 54 lab hours****Equivalent to: MTRK 171****Grade Mode: Pass/No Pass, Standard Letter***Prerequisite(s): SPWG 170A by department consent based off of experience and/or industry certification.*

This course is intended for the diesel technology student intending to pursue a career in stationary power generation maintenance and repair. The last course in the series for Power Generation, this course will provide a basic overview of ATS components and operations. This course will provide a background in UPS battery systems as well as flywheel energy storage systems. This course will prepare students for the EGSA or CEP certifications.

Programs

Associate Degrees

- A.S. in Automotive Technology (<http://catalog.citruscollege.edu/disciplines/automotive-technology/automotive-technology-as/>)
- A.S. in Medium and Heavy-Duty Diesel Truck Technology (<http://catalog.citruscollege.edu/disciplines/automotive-technology/medium-heavy-diesel-truck-technology-as/>)

Certificates of Achievement

- Automotive Maintenance and Light Repair (<http://catalog.citruscollege.edu/disciplines/automotive-technology/automotive-maintenance-light-repair-certificate-achievement/>)
- Automotive Research and Development (<http://catalog.citruscollege.edu/disciplines/automotive-technology/automotive-research-development-certificate-achievement/>)
- Automotive Service, Diagnosis and Repair - Master Technician (<http://catalog.citruscollege.edu/disciplines/automotive-technology/automotive-service-diagnosis-repair-master-technician-certificate-achievement/>)
- Automotive Service, Diagnosis and Repair - Toyota/Lexus/Scion Technician (<http://catalog.citruscollege.edu/disciplines/automotive-technology/automotive-service-diagnosis-repair-toyota-lexus-scion-technician-certificate-achievement/>)
- Automotive Service, Diagnosis and Repair - Undercar Drivetrain Specialist (<http://catalog.citruscollege.edu/disciplines/automotive-technology/automotive-service-diagnosis-repair-undercar-drivetrain-specialist-certificate-achievement/>)

- Automotive Service, Diagnosis and Repair - Underhood Specialist (<http://catalog.citruscollege.edu/disciplines/automotive-technology/automotive-service-diagnosis-repair-underhood-specialist-certificate-achievement/>)
- Clean Energy and Vehicle Electrification Technology (<http://catalog.citruscollege.edu/disciplines/automotive-technology/clean-energy-vehicle-electrification-technology-certificate-achievement/>)
- Diesel Engine Service, Diagnosis and Repair Technician (<http://catalog.citruscollege.edu/disciplines/automotive-technology/diesel-engine-service-diagnosis-repair-technician-certificate-achievement/>)
- Medium and Heavy-Duty Truck Service, Diagnosis, and Repair Master Technician (<http://catalog.citruscollege.edu/disciplines/automotive-technology/medium-heavy-truck-service-diagnosis-repair-technician-certificate-achievement/>)
- Stationary Power Generation Service, Diagnosis and Repair Technician (<http://catalog.citruscollege.edu/disciplines/automotive-technology/stationary-power-generation-service-diagnosis-repair-technician-certificate-achievement/>)

Skill Awards

- Automotive Emissions Inspection (<http://catalog.citruscollege.edu/disciplines/automotive-technology/automotive-emissions-inspection-skill-award/>)
 - Engine Rebuilding and Machining (<http://catalog.citruscollege.edu/disciplines/automotive-technology/engine-rebuilding-machining-skill-award/>)
 - Maintenance and Light Repair: Undercar (<http://catalog.citruscollege.edu/disciplines/automotive-technology/maintenance-light-repair-undercar-skill-award/>)
 - Maintenance and Light Repair: Underhood (<http://catalog.citruscollege.edu/disciplines/automotive-technology/maintenance-light-repair-underhood-skill-award/>)
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