

Auto Mechanics (AUT)

AUT 1000. Survey of Automotive Technology. (2 Credits)

An introductory course for those interested in Automotive Technology. Presents basic automotive repair lessons on ignition and fuel systems, brakes, CV joints, and emissions for state inspections. Discusses electrical accessories, computerized engine controls, and chassis components.

AUT 100L. Survey of Automotive Lab. (1 Credit)

Corequisite(s): AUT 1000

Introductory course for those interested in Automotive Technology. Offers basic automotive repair lab experiences on proper and safe equipment usage, vehicle construction, engine operation, steering and suspension components, brakes, measuring and diagnostic tools.

Tool room fee of \$19 for equipment applies.

AUT 1010. Maintenance and Light Repair. (2 Credits)

Teaches skills in shop safety and basic skills to prepare students for future automotive technology-related courses and placement in high skill, high paying employment. Includes service information systems, precision measurement, tire and wheel service, bearings, headlamp adjustment, lubricants and fluids, cleaning methods, gaskets and sealants, belts and hoses, cooling systems, and other systems.

AUT 101L. Maintenance and Light Repair Lab. (1 Credit)

Develops necessary skills in shop safety and basic maintenance skills. Presents basic maintenance and light repair of vehicle systems. Prepares students for future automotive technology related courses and placement in high skill, high paying employment areas. Examines vehicle system operations such as: service information, precision measurement, tires and wheels, bearings, headlamp adjustment, lubricants and fluids, cleaning methods, gaskets and sealants, belts and hoses and cooling systems

AUT 1110. Brake Systems. (2 Credits)

Corequisite(s): AUT 111L Recommended

For automotive majors and other interested community members. Covers the principles of automotive braking including hydraulic theory, diagnosis, and service of brake systems. Studies drum, disc, and power units. Includes wheel bearing adjustments, packing, and troubleshooting. Discusses tire construction including both lateral and radial run out and wheel balancing techniques.

Software fee of \$10 applies

Lab access fee of \$15 for computers applies.

AUT 111L. Brake Systems Lab. (1 Credit)

Pre- or Corequisite(s): AUT 1110

Provides hands on brake systems instruction, including drum, disc, and power units. Includes wheel bearing adjustments, packing, and troubleshooting.

Labs include tire construction, both lateral and radial run out and wheel balancing techniques.

Tool room fee of \$19 for equipment applies.

Course Lab fee of \$17 for computers applies.

AUT 1120. Manual Power Trains. (2 Credits)

Corequisite(s): AUT 112L Recommended

For automotive majors and other interested community members. Designed to develop skills and knowledge in the area of manual transmission/transaxles and driveline components. Covers the function, construction, operation, inspection, troubleshooting and servicing of front, rear, and four-wheel drive power transmission devices used in passenger cars and light trucks.

Software fee of \$10 applies.

Lab access fee of \$15 for computers applies.

AUT 112L. Manual Power Trains Lab. (1 Credit)

Pre- or Corequisite(s): AUT 1120

Define diagnosis and repair of manual transmissions including transaxles, differentials, drive shafts, and four wheel drive components. Operation of clutches with torque and gear application.

Tool room fee of \$19 for equipment applies.

Course Lab fee of \$16 for materials applies.

AUT 1130. Engine Repair. (2 Credits)

Corequisite(s): AUT 113L Recommended

Offers an in-depth study of design, operation, troubleshooting, and service procedures for modern gasoline and diesel engines. Presents procedures for disassembly and reassembly of engine units, service, and technical data.

Software fee of \$10 applies.

Lab access fee of \$15 for computers applies.

AUT 113A. Engine Repair. (2 Credits)

For automotive majors and other interested community members. Studies construction, operation, and performance of various types of engines. Covers the theory of combustion, and characteristics of fuels, lubrication systems, cooling systems, timing valves, and wear problems with all other parts of the engine. Includes lab experience.

Tool room fee of \$10 for equipment applies.

AUT 113B. Engine Repair. (2 Credits)

Designed for anyone interested in small-engine repair. Includes hands hands-on application with shop time. Offers practical information about small engines, theory, operations, and maintenance. Provides information, troubleshooting and service techniques for snowmobiles, 4-wheelers, personal watercraft, mowers, tillers, and other small engine applications.

AUT 113L. Engine Repair Lab. (1 Credit)

Pre- or Corequisite(s): AUT 1130

Provides a laboratory experience enhanced by following the Engine Repair ASE task list. Emphases demonstrations, observations and hands-on participation. Utilizes actual vehicle systems of major manufactures to supplement training.

Tool room fee of \$19 for equipment applies.

Course Lab fee of \$17 for materials applies.

AUT 1160. Automotive Electrical Systems. (2 Credits)

Corequisite(s): AUT 116L Recommended

Studies electrical and electronic fundamentals found and used on current model automobiles and trucks. Topics of study are: electricity, Ohm's Law, magnetism, inductance, capacitance, electronic devices, schematic user's information, test procedures, test equipment, and batteries.

AUT 116L. Automotive Electrical Systems Lab. (1 Credit)

Pre- or Corequisite(s): AUT 1160

Studies electrical and electronic fundamentals found and used on current model automobiles and trucks. Topics of study are: electricity, Ohm's Law, magnetism, inductance, capacitance, electronic devices, schematic user's information, test procedures, test equipment, and batteries. Lab exercises are correlated with the Automotive Service Excellence (ASE) P1 task list. Lab work will include activities on lab circuitry and live vehicles.

Tool room fee of \$19 for equipment applies.

Course Lab fee of \$17 for materials applies.

AUT 1170. Engine Electrical Systems. (2 Credits)

Corequisite(s): AUT 1160, AUT 117L Recommended

Studies the function, construction, operation, testing, diagnosis and servicing of automotive ignition systems, starting, charging/generator systems and battery testing using a variety of diagnostic test equipment.

AUT 117L. Engine Electrical Systems Lab. (1 Credit)

Studies the function, construction, operation, testing, diagnosis and servicing of automotive ignition systems, starting, charging systems and battery testing using a variety of diagnostic test equipment. Proper use of diagnostic test equipment in the lab and on vehicle systems will stressed.

Tool room fee of \$19 for equipment applies.

Course Lab fee of \$17 for materials applies.

AUT 1210. Suspension and Steering Systems. (2 Credits)

Corequisite(s): AUT 121L Recommended

Discusses nomenclature, theory of operation, and service procedures for passenger car and light-truck suspensions and computer controlled power steering systems. Includes instruction in two-wheel and four-wheel electronic systems. Presents methods of alignment including computerized alignment and service tools.

Software fee of \$10 applies.

Lab access fee of \$15 for computers applies.

AUT 121L. Suspension and Steering Systems Lab. (1 Credit)

Pre- or Corequisite(s): AUT 1210

Provides a laboratory experience enhanced by following the Suspension and Steering ASE task list. Emphases demonstrations, observations and hands-on participation. Utilizes actual vehicle systems of major manufactures to supplement training.

Tool room fee of \$19 for equipment applies. Course Lab fee of \$17 for materials applies.

AUT 1220. Automatic Powertrain Systems. (2 Credits)

Corequisite(s): AUT 122L

Includes the operation, diagnosis, repair, and adjustment of automatic transmissions and transaxles. Covers planetary gearing, strategies for operation, and service procedures of passenger car, SUVs and light-trucks.

Software fee of \$10 for applies.

Lab access fee of \$15 for computers applies.

AUT 122L. Automatic Transmissions and Transaxles Lab. (1 Credit)

Pre- or Corequisite(s): AUT 1220

Provides a laboratory experience enhanced by following the Automatic Transmissions and Transaxles ASE task list. Emphasizes demonstrations, observations and hands-on participation. Utilizes actual vehicle systems of major manufactures to supplement training.

Tool room fee of \$19 for equipment applies.

Course Lab fee of \$19 for materials applies.

AUT 1230. Engine Performance. (2 Credits)

Prerequisite(s): AUT 1110, AUT 1120, AUT 1130, and AUT 1160

Corequisite(s): AUT 123L Recommended

Studies electrical and fuel systems fundamentals found on passenger cars, light-trucks, and marine applications of theory, operation, and construction. Includes solid state electronic ignition systems. Teaches tune-up including diagnosis and troubleshooting. Computerized fuel injection found on gasoline and diesel engines will also be studied.

Software fee of \$10 applies.

Lab access fee of \$15 for computers applies.

AUT 123A. Engine Performance. (2 Credits)

For automotive majors and other interested community members. Studies electrical and fuel system fundamentals including theory, construction and principles of operation. Covers batteries, lighting, starting, and charging. Includes all solid state electronic and ignition systems. Teaches tune-up including diagnosis and troubleshooting. Studies computerized ignition and fuel injection. Includes lab experience.

AUT 123B. Engine Performance 2nd Half. (2 Credits)

Includes advanced instruction in engine performance, starting systems, charging systems, and indicator circuits. Discusses all mechanical and electronic parts of the vehicle relative to quality engine tune-up and diagnostic instruction. Includes lab experience.

AUT 123L. Engine Performance Lab. (1 Credit)

Pre- or Corequisite(s): AUT 1230

Provides a laboratory experience enhanced by following the Engine Performance ASE task list. Emphases demonstrations, observations and hands-on participation. Utilizes actual vehicle systems of major manufactures to supplement training.

Tool room fee of \$19 for equipment applies.

Course Lab fee of \$17 for materials applies.

AUT 1260. Tech Math for Mechanics. (3 Credits)

For students in Automotive, Collision Repair, and Diesel Mechanics technology majors. Covers principles of math as required by the industry. Studies pressures, measuring engine and horsepower output, hydraulics, torque, and electrical flow. Includes solving equations in percent, proportion, variation, formula rearrangement, function and graphs with right and oblique triangles. Successful completers should be able to solve problems on the job using technical and mathematical data.

AUT 201L. Automotive Service Practicum Engine Performance and Steering Suspension. (2 Credits)

Prerequisite(s): AUT 1210, AUT 1230 with a grade of C- or better

Includes field type service work in an instructional setting. Emphasizes vehicle service needs which are most frequently required in modern commercial service centers. Requires the diagnosis and repair of computerized vehicle systems. Includes standards for quality and quantity of work produced. Studies parts procurement, estimates, repair orders, and customer relations. Follows ASE P2 Performance Tasks for Steering/Suspension and Engine Performance.

Tool room fee of \$19 for equipment applies.

Course Lab fee of \$17 for materials applies.

AUT 202L. Automotive Service Practicum Emission Controls and Chassis Electronics. (2 Credits)

Prerequisite(s): AUT 1160, AUT 1230 with a grade of C- or better

Includes field type service work in an instructional setting. Emphasizes vehicle service needs which are most frequently required in modern commercial service centers. Requires the diagnosis and repair of computerized vehicle systems. Includes standards for quality and quantity of work produced. Studies parts procurement, estimates, repair orders, and customer relations. Follows ASE P2 Performance Tasks for Emission Control Systems and Chassis Electrical.

Tool room fee of \$19 for equipment applies.

Course Lab fee of \$17 for materials applies.

AUT 203L. Automotive Service Practicum Brake Systems and Transmission Controls. (2 Credits)

Prerequisite(s): AUT 1110, AUT 1160, AUT 1220 with a grade of C- or better

Includes field type service work in an instructional setting. Emphasizes vehicle service needs which are most frequently required in modern commercial service centers. Requires the diagnosis and repair of computerized vehicle systems. Includes standards for quality and quantity of work produced. Studies parts procurement, estimates, repair orders, and customer relations. Follows ASE P2 Performance Tasks for Automatic Transmissions and Brake Systems including Anti-Lock and Traction Control.

Tool room fee of \$19 for equipment applies.

Course Lab fee of \$17 for materials applies.

AUT 204L. Automotive Service Practicum Fuel Management Systems and HVACR. (2 Credits)

Prerequisite(s): AUT 1160, AUT 1230 with a grade of C- or better

Includes field type service work in an instructional setting. Emphasizes vehicle service needs which are most frequently required in modern commercial service centers. Requires the diagnosis and repair of computerized vehicle systems. Includes standards for quality and quantity of work produced. Studies parts procurement, estimates, repair orders, and customer relations. Follows ASE P2 Performance Tasks for Engine Performance and Heating, Ventilation and Air Conditioning Systems.

Tool room fee of \$19 for equipment applies.

Course Lab fee of \$17 for materials applies.

AUT 2110. Advanced Steering Suspension and Alignment. (2 Credits)

Prerequisite(s): AUT 1210, AUT 1160 with a grade of C- or better

Corequisite(s): AUT 201L Recommended

Discusses advanced theory of two-wheel and four-wheel alignment. Studies nomenclature, theory of operation and service procedures for mechanical, electronic, and electrical parts of automotive steering and suspension systems.

Software fee of \$10 applies.

Lab access fee of \$15 for computers applies.

AUT 211L. Automotive Service Practicum Steering/Suspension/Alignment Lab. (1 Credit)

Prerequisite(s): AUT 1210

Corequisite(s): AUT 2110

Includes field type service work in an instructional setting. Emphasizes vehicle service needs which are most frequently required in modern commercial service centers. Requires the diagnosis and repair of computerized vehicle systems. Includes standards for quality and quantity of work produced.

Studies parts procurement, estimates, repair orders, and customer relations. Follows ASE P2 Performance Tasks for Steering/Suspension.

AUT 2120. Advanced Engine Performance. (2 Credits)

Prerequisite(s): AUT 1130, AUT 1230, AUT 1160 with a grade of C- or better

Corequisite(s): AUT 202L Recommended

Includes advanced instruction in engine performance, indicator circuits and On-Board Diagnostics II (OBD-II). Discusses mechanical and electronic parts of the vehicle relative to quality engine tune-up and diagnostic instruction.

Software fee of \$10 applies.

Lab access fee of \$15 for computers applies.

AUT 212L. Automotive Service Practicum Engine Performance Lab. (1 Credit)

Prerequisite(s): AUT 1230

Corequisite(s): AUT 2120

Includes field type service work in an instructional setting. Emphasizes vehicle service needs which are most frequently required in modern commercial service centers. Requires the diagnosis and repair of computerized vehicle systems. Includes standards for quality and quantity of work produced.

Studies parts procurement, estimates, repair orders, and customer relations. Covers tasks related to engine performance.

AUT 2130. Advanced Emission Control Systems. (2 Credits)

Prerequisite(s): AUT 1130, AUT 1230, AUT 1160 with a grade of C- or better

Corequisite(s): AUT 202L Recommended

Studies emissions control systems on vehicles. Reviews county emissions certification requirements. Emphasizes the pre and post testing of the different emission systems and the control of the systems as they apply to different types of fuel systems.

Software fee of \$10 applies.

Lab access fee of \$15 for computers applies.

AUT 213L. Automotive Service Practicum Emission Controls Lab. (1 Credit)

Prerequisite(s): AUT 1230

Corequisite(s): AUT 2130

Includes field type service work in an instructional setting. Emphasizes vehicle service needs which are most frequently required in modern commercial service centers. Requires the diagnosis and repair of computerized vehicle systems. Includes standards for quality and quantity of work produced.

Studies parts procurement, estimates, repair orders, and customer relations. Follows ASE P2 Performance Tasks for Emission Control Systems.

AUT 2140. Chassis Electrical and Electronics Systems. (2 Credits)

Prerequisite(s): AUT 1160, AUT 1170 with a grade of C- or better

Corequisite(s): AUT 202L Recommended

Studies theory, diagnosis, and repair of chassis electrical and electronic systems. Includes the study of lighting systems, electronic dash circuits, inflatable restraint systems, electronic cruise control systems and other accessories found on vehicles.

AUT 214L. Automotive Service Practicum Chassis Electrical and Electronics Lab. (1 Credit)

Prerequisite(s): AUT 1160

Corequisite(s): AUT 2140

Includes field type service work in an instructional setting. Emphasizes vehicle service needs which are most frequently required in modern commercial service centers. Requires the diagnosis and repair of computerized vehicle systems. Includes standards for quality and quantity of work produced.

Studies parts procurement, estimates, repair orders, and customer relations. Follows ASE P2 Performance Tasks for Chassis Electrical.

AUT 2210. Advanced Braking and Control Systems. (2 Credits)

Prerequisite(s): AUT 1110, AUT 1160 with a grade of C- or better

Corequisite(s): AUT 221L Recommended

Covers diagnosis and repair of electronic controlled braking systems; including anti-lock brakes, traction control systems, stability control systems and other control systems found on modern vehicles.

Software fee of \$10 applies.

Lab access fee of \$15 for computers applies.

AUT 221L. Automotive Service Practicum Brake Systems Lab. (1 Credit)

Prerequisite(s): AUT 1110

Corequisite(s): AUT 2210

Includes field type service work in an instructional setting. Emphasizes vehicle service needs which are most frequently required in modern commercial service centers. Requires the diagnosis and repair of computerized vehicle systems. Includes standards for quality and quantity of work produced. Studies parts procurement, estimates, repair orders, and customer relations. Follows ASE P2 Performance Tasks for Brake, Anti-Lock and Traction Control Systems.

AUT 2220. Automatic Transmissions and Electronic Controls. (2 Credits)

Prerequisite(s): AUT 1160 with a grade of C- or better

Corequisite(s): AUT 203L Recommended

Includes advanced instruction in rear-wheel drive and transaxle automatic transmissions for passenger cars and trucks (light-duty and medium-duty). Studies computerized transmission controls for shifting and torque converter operation. Stresses service, diagnosis and troubleshooting using electronic test equipment.

Software fee of \$10 applies.

Lab access fee of \$15 for computers applies.

AUT 222L. Automotive Service Practicum Transmission Controls Lab. (1 Credit)

Prerequisite(s): AUT 1220

Corequisite(s): AUT 2220

Includes field type service work in an instructional setting. Emphasizes vehicle service needs which are most frequently required in modern commercial service centers. Requires the diagnosis and repair of computerized vehicle systems. Includes standards for quality and quantity of work produced. Studies parts procurement, estimates, repair orders, and customer relations. Follows ASE P2 Performance Tasks for Transmission Controls.

AUT 2240. Heating Ventilation Air Conditioning and Refrigeration Theory. (2 Credits)

Offers an In-depth study of automotive heating, ventilation, air conditioning (A/C), and refrigeration systems. Includes theory of operation, diagnosis and repair of HVACR systems. Environmental safety issues are stressed including laws and regulations, CFC recovery and recycling, ozone depletion, and new, environmentally friendly, systems. Computerized automatic temperature controlled systems are also covered. Stresses service, diagnosis and troubleshooting using electronic test equipment.

Software fee of \$10 applies.

Lab access fee of \$15 for computers applies.

AUT 224L. Automotive HVAC Lab. (1 Credit)

Corequisite(s): AUT 2240

This course provides a laboratory experience for Heating, Ventilation, and Air Conditioning lecture (AUT 2240). Studies and provides experience with R12 and 134a refrigerants, environmental issues, retrofit assemblies, evacuation and charging AC systems, and problem solving of AC systems.

Course Lab fee of \$17 for materials applies.

AUT 2250. Electronic Fuel Management Systems. (2 Credits)

Prerequisite(s): AUT 1230, AUT 1160 with a grade of C- or better

Corequisite(s): AUT 204L Recommended

Studies automotive fuel controls with particular emphasis placed on micro-processor control systems. Studies electronic and mechanical sensors of fuel and ignition systems. Also covers alternative fuel systems. Stresses service, diagnosis and troubleshooting using electronic test equipment.

AUT 225L. Automotive Service Practicum Fuel Management Systems Lab. (1 Credit)

Prerequisite(s): AUT 1230

Corequisite(s): AUT 2250 or AUT 2350

Includes field type service work in an instructional setting. Emphasizes vehicle service needs which are most frequently required in modern commercial service centers. Requires the diagnosis and repair of computerized vehicle systems. Includes standards for quality and quantity of work produced. Studies parts procurement, estimates, repair orders, and customer relations. Follows ASE P2 Performance Tasks for Advanced Engine Performance and Fuel Management Systems.

AUT 2350. Electronic Diesel Fuel Management Systems. (2 Credits)

Prerequisite(s): AUT 1160 with a grade of C- or better

Corequisite(s): AUT 204L Recommended

Studies automotive diesel fuel controls with particular emphasis placed on micro-processor control systems. Studies electronic and mechanical sensors of diesel fuel and ignition systems. Covers alternative diesel fuel systems i.e. bio-diesel. Stresses service, diagnosis and troubleshooting using electronic test equipment.

AUT 281R. Cooperative Work Experience. (1-8 Credits)

Corequisite(s): AUT 285R

Designed for Automotive Technology majors. Provides paid, on-the-job work experience in the student's major. Work experience, the correlated class, and enrollment are coordinated by the Cooperative Coordinator. Includes student, employer, and coordinator evaluations, on-site work visits, written assignments, and oral presentations. Provides experience in writing and completing individualized work objectives that improve present work performance. May be repeated as desired for interest. May be graded credit/no credit.

AUT 285R. Cooperative Correlated Class. (1 Credit)

Corequisite(s): AUT 281R

Designed for Automotive Technology majors. Identifies on-the-job problems and provides remediation of those problems through in-class discussion and study. Includes the study of identifying and maximizing service opportunities. Students register for this class with approval of the Coop coordinator. Included lecture, guest speakers, video tapes, role playing, case analysis, oral presentations, and written assignments. Completers should be better able to perform in their field of work or study. May be repeated as desired for interest.

AUT 299R. SkillsUSA. (1 Credit)

Designed for Automotive Technology majors. Supports and facilitates the goals and objectives of SkillsUSA. SkillsUSA is a pre-professional student organization that develops social awareness, civic, recreational, and social activities. Students may participate in local, state, and national contests. May be repeated as desired for interest.