

Science/Math/Computer Science

12-20

Choose at least four courses from at least two prefixes including at least three laboratory courses in biological and/or physical science

Electives

39

Plus enough additional electives to reach the minimum of 90 credits for the AAOT.

Recommend: ART 115 Basic Design: 2-D, ART 116 Basic Design: Color, ART 117 Basic Design: 3-D and ART 131 Drawing I.

Total Credits 90-106

¹ HHPA activity courses (1 credit each) are not to be duplicated.

ADVISING NOTES

Two years of a world language is recommended. Successful transfer to an upper-division arts school or program is usually based not only on transcripts, but also on the student's portfolio. Students seeking transfer to an accredited art school in Oregon or elsewhere are encouraged to work closely with their advisors to build that portfolio.

AUTOMOTIVE TECHNOLOGY

Automotive Management

Associate of Applied Science

PROGRAM DESCRIPTION

The Automotive Technology program emphasizes educating students as multi-skilled workers with the ability to complete a wide variety of tasks within the automotive technology service and repair setting. Coursework includes technical skills in computer applications, electrical, electronic, mechanical, hydraulic and network systems, both in theory as well as hands-on training. A self-paced method of instruction is offered for the entry-level courses. Communication skills are also highly emphasized throughout each program. The Associate of Applied Science degree enables students to enter the transportation industry as an automotive technician and/or middle management.

ACCREDITATION

National Automotive Technicians Education Foundation (NATEF)

PROGRAM COSTS

(beyond standard tuition/fees and textbooks)

Material Costs

- Materials (coveralls, safety glasses, work jacket, safety shoes, t-shirts): \$200
- ASE (Automotive Service Excellence) Certification – up to \$450 total for all eight areas of testing
- Cost of tools: \$1,500 to \$2,500 depending on the source

Enrollment Fees

- All AUT prefix courses up to AUT 260 Diesel Performance II have a \$15 course fee
- All advanced AUT courses (AUT 260 Diesel Performance II and above) have a \$200 course fee

PROGRAM ENTRANCE REQUIREMENTS**Academic Entrance Requirements**

- Required:
 - Students must complete the following five courses prior to proceeding into other AUT courses: AUT 101 Basic Electricity-Automotive, AUT 106 Automotive Program Orientation, AUT 107 Mechanical Systems I, AUT 110 Small Gas Engines and AUT 115 College Success for Auto Tech.
- Recommended:
 - High school diploma or GED

PROGRAM PERFORMANCE STANDARDS**Academic Requirements**

- Students must have a 2.0 cumulative GPA to earn a COCC certificate or degree.

- All courses in the program must be completed with a grade of C or higher.

PROGRAM COURSE REQUIREMENTS**Core Courses**

AUT 101	Basic Electricity-Automotive	2
AUT 102	Automotive Electric I	5
AUT 103	Automotive Electric II	2
AUT 104	Automotive Electric III	2
AUT 105	Diesel Performance I	2
AUT 106	Automotive Program Orientation	1
AUT 107	Mechanical Systems I	3
AUT 110	Small Gas Engines	3
AUT 111	Computerized Engine Controls	5
AUT 112	Basic Engine Performance I	1
AUT 113	Basic Engine Performance II	1
AUT 114	Welding for the Auto Trade	3
AUT 115	College Success for Auto Tech	2
AUT 201	Automotive Engines	4
AUT 202	Manual Drive Trains I	3
AUT 203	Manual Drive Trains II	3
AUT 204	Steering and Suspension	3
AUT 205	Engine Performance I	2
AUT 206	Engine Performance II	2
AUT 208	Automotive Brakes	3
AUT 216A	CWE Automotive A ¹	4
AUT 251	Automatic Transmissions I	3
AUT 253	Automotive Air Conditioning	3
AUT 256	Automatic Transmissions II	2
BA 101	Intro to Business	4
BA 111	Applied Accounting I	3
BA 178	Customer Service	3
BA 206	Management Fundamentals I	4
BA 223	Marketing Principles I	4
BA 280	Co-op Work Experience Business	3
BA 286	Managing Business Processes	4
or BA 250	Entrepreneurship	

Other Courses

CIS 120	Computer Concepts (or Computer Competency Test)	0-4
HHP 252A	Fitness/First Aid	3
MTH 060	Algebra I (or higher)	4
WR 121	Academic Composition	4

Total Credits 100-104

¹ Automotive CWE may be taken after 24 credits of automotive courses in addition to the basic skills courses, including summer. Students may not enroll in CWE without first being cleared by an instructor. Exceptions are based on individual student goals.

ADVISING NOTES

Full-time students are discouraged from working more than 15 hours each week due to a heavy course load. It is recommended that the ASE (Automotive Service Excellence) certification test be taken as the student completes the program.

Automotive Management: Technology in Electronics and Diagnostics

Associate of Applied Science

PROGRAM DESCRIPTION

The Automotive Technology program emphasizes educating students as multi-skilled workers with the ability to complete a wide variety of tasks within the automotive technology service and repair setting. Coursework includes technical skills in computer applications, electrical, electronic, mechanical, hydraulic and network systems, both in theory as well as hands-on training. Heavy emphasis will be placed on the following three areas: Hybrid Electric Vehicles (HEV) /Electric Vehicles (EV), clean diesel

and on-board vehicle networking. A self-paced method of instruction is offered for the entry-level courses. Communication skills are also highly emphasized throughout each program. Both the Associate of Applied Science degree and Master Automotive Certificate option enable students to enter the transportation industry as an automotive technician and/or middle management.

ACCREDITATION

National Automotive Technicians Education Foundation (NATEF)

PROGRAM COSTS

(beyond standard tuition/fees and textbooks)

Material Costs

- Materials (coveralls, safety glasses, work jacket, safety shoes, t-shirts): \$200
- ASE (Automotive Service Excellence) Certification – up to \$450 total for all eight areas of testing
- Cost of tools: \$1,500 to \$2,500 depending on the source

Enrollment Fees

- All AUT prefix courses up to AUT 260 Diesel Performance II have a \$15 course fee
- All advanced AUT courses (AUT 260 Diesel Performance II and above) have a \$200 course fee

PROGRAM ENTRANCE REQUIREMENTS

Academic Entrance Requirements

- Required:
 - Students must complete the following five courses prior to proceeding into other AUT courses: AUT 101 Basic Electricity-Automotive, AUT 106 Automotive Program Orientation, AUT 107 Mechanical Systems I, AUT 110 Small Gas Engines and AUT 115 College Success for Auto Tech.
- Recommended:
 - High school diploma or GED

PROGRAM PERFORMANCE STANDARDS

Academic Requirements

- Students must have a 2.0 cumulative GPA to earn a COCC certificate or degree.
- All courses in the program must be completed with a grade of C or higher.

PROGRAM COURSE REQUIREMENTS

Core Courses

AUT 101	Basic Electricity-Automotive	2
AUT 102	Automotive Electric I	5
AUT 103	Automotive Electric II	2
AUT 104	Automotive Electric III	2
AUT 105	Diesel Performance I	2
AUT 106	Automotive Program Orientation	1
AUT 107	Mechanical Systems I	3
AUT 110	Small Gas Engines	3
AUT 111	Computerized Engine Controls	5
AUT 115	College Success for Auto Tech	2
AUT 201	Automotive Engines	4
AUT 202	Manual Drive Trains I	3
AUT 203	Manual Drive Trains II	3
AUT 204	Steering and Suspension	3
AUT 205	Engine Performance I	2
AUT 206	Engine Performance II	2
AUT 208	Automotive Brakes	3
AUT 216A	CWE Automotive A ¹	4
AUT 216B	CWE Automotive B	4
AUT 251	Automatic Transmissions I	3
AUT 253	Automotive Air Conditioning	3
AUT 256	Automatic Transmissions II	2
AUT 260	Diesel Performance II	4
AUT 270	Auto Controller Systems I	4
AUT 271	Auto Controller Systems II	4
AUT 280	Hybrid Electric Vehicles I (HEV)	4
AUT 281	Hybrid Electric Vehicles II (HEV)	4

Other Requirements

BA 178	Customer Service	3
CIS 120	Computer Concepts (or Computer Competency Test)	0-4
CIS 131	Software Applications	4
HHP 252A	Fitness/First Aid	3
MTH 060	Algebra I (or higher)	4
WR 121	Academic Composition	4

Total Credits 101-104

¹ Automotive CWE may be taken after 24 credits of automotive courses in addition to the basic skills courses, including summer. Students may not enroll in CWE without first being cleared by an instructor. Exceptions are based on individual student goals.

ADVISING NOTES

Full-time students are discouraged from working more than 15 hours each week due to a heavy course load. It is recommended that the ASE (Automotive Service Excellence) certification test be taken as the student completes the program.

Master Automotive Technician Certificate of Completion

PROGRAM DESCRIPTION

The Master Automotive Technician program emphasizes educating students as multi-skilled workers with the ability to complete a wide variety of tasks within the automotive technology service and repair setting. Coursework includes technical skills in computer applications, electrical, electronic, mechanical, hydraulic and network systems, both in theory as well as hands-on training. A self-paced method of instruction is offered for the entry-level classes. Communication skills are also highly emphasized throughout the program. The program is planned so that students will be able to complete the Master Automotive Technician Certificate in approximately 12 to 15 months as well as earn up to seven short-term certificates of completion. The certificate enables students to enter the transportation industry as an automotive technician.

ACCREDITATION

National Automotive Technicians Education Foundation (NATEF)

PROGRAM COSTS

(beyond standard tuition/fees and textbooks)

Material Costs

- Materials (coveralls, safety glasses, work jacket, safety shoes, t-shirts): \$200
- ASE (Automotive Service Excellence) Certification – up to \$450 total for all eight areas of testing
- Cost of tools: \$1,500 to \$2,500 depending on the source

Enrollment Fees

- AUT prefix courses may have a \$15 course fee based on lab usage

PROGRAM ENTRANCE REQUIREMENTS

Academic Entrance Requirements

- Required:
 - AUT 106 Automotive Program Orientation is a prerequisite or co-requisite to AUT 101 Basic Electricity-Automotive, AUT 110 Small Gas Engines and AUT 115 College Success for Auto Tech. These four courses are prerequisites to all other AUT courses.
- Recommended:
 - High school diploma or GED

PROGRAM PERFORMANCE STANDARDS

Academic Requirements

- Students must have a 2.0 cumulative GPA to earn a COCC certificate or degree.
- All courses in the program must be completed with a grade of C or higher.

ARH 202 - ART HISTORY: WESTERN: EARLY MEDIEVAL TO LATE RENAISSANCE

Surveys the major periods of visual arts in the West. Introduces students to the concepts of art and surveys the development of art in historical context from the Early Middle Ages through the Late Renaissance. Emphasizes selected works of painting, sculpture, architecture, and other arts studied in relation to the cultures producing them. Recommended preparation: WR 065.

Credits: 4 Lecture: 4

ARH 203 - ART HISTORY: WESTERN: EARLY BAROQUE TO LATE 20TH CENTURY

Surveys the major periods of visual arts in the West. Introduces students to the concepts of art and surveys the development of art in historical context from the Baroque Age through the 20th Century. Emphasizes selected works of painting, sculpture, architecture, and other arts studied in relation to the cultures producing them. Recommended preparation: WR 065.

Credits: 4 Lecture: 4

ARH 206 - MODERN ART HISTORY

A specialized chronological survey of Modernism in the visual arts from the mid-19th Century to the present day. Explores the many eclectic developments in Modern art from its beginnings through the Postmodern contemporary era. Emphasizes major artists, movements, and critical concepts in modern art and theory, and relates those concepts to the art of the past as well as issues facing artists and society today.

Credits: 4 Lecture: 4

ARH 207 - NATIVE AMERICAN ART HISTORY

Survey of the arts indigenous to Mesoamerican and North American Indian cultures emphasizing architecture, pottery, painting and the fiber arts.

Credits: 4 Lecture: 4

ARH 208 - ART HISTORY: NON-WESTERN

A specialized survey of the art of Non-Western cultures around the world, from the Prehistoric past through the present day. This course will examine the artistic and cultural traditions of Islam, India, East Asia, the Pacific Islands, Sub-Saharan Africa and the Americas. The course will focus on understanding select works of art and architecture within their original cultural, religious, and historical contexts, and will contrast various Non-Western artistic philosophies and values with those of the Western world. Recommended preparation: WR 065.

Credits: 4 Lecture: 4

ARH 298 - INDEPENDENT STUDY: ART HISTORY

Individualized, advanced study to focus on outcomes not addressed in existing courses or of special interest to a student. P/NP grading. Prerequisites: Instructor approval. Recommended preparation: prior coursework in the discipline.

Credits: 1 to 4

AUTOMOTIVE**AUT 101 - BASIC ELECTRICITY FOR AUTOMOTIVE**

Provides understanding of fundamental principles of electricity. Covers basic electrical quantities, Ohm's law, power, series, and parallel circuits, magnetism, electromagnetism and an introduction to DC-current troubleshooting. Introduces student to the use of a digital multimeter and oscilloscope. Student will also be introduced to electrical schematics. A self-paced course. Prerequisite with concurrency: AUT 106.

Credits: 2 Lab: 6

AUT 102 - AUTOMOTIVE ELECTRIC I

Covers Automotive Electrical Skills. Introduces the testing, disassembly, and rebuilding of various electrical equipment. Troubleshooting and using various test equipment common to the Automotive trade will be stressed. Introduces the use of automotive scan tools for basic diagnostics. Introduces the use of intrusive and non-intrusive testing methods.

Prerequisites: AUT 101, AUT 106, AUT 107, AUT 110 and AUT 115.

Recommended preparation: MTH 020 or higher or minimum placement into MTH 060.

Credits: 5 Lecture: 2 Lab: 9

AUT 103 - AUTOMOTIVE ELECTRIC II

Studies disassembly, testing and rebuilding of various electrical equipment. Stresses troubleshooting and using various test equipment common to the automotive trade. Prerequisites: AUT 102.

Credits: 2 Lecture: 1 Lab: 3

AUT 104 - AUTOMOTIVE ELECTRIC III

A hands-on study and familiarization of repair procedures for air bag, security entry and cruise control systems. Learn diagnostics and repair procedures using body control modules. Learn diagnostics and repair procedures for hybrid and new electrical systems. Prerequisites: AUT 103.

Credits: 2 Lecture: 1 Lab: 3

AUT 105 - DIESEL PERFORMANCE I

Introduces principles of diesel systems and basic diagnosis. Includes engine analysis, cooling and exhaust systems, fuel management systems and diesel engines. Prerequisites: AUT 101, AUT 106, AUT 107, AUT 110 and AUT 115.

Credits: 2 Lecture: 1 Lab: 3

AUT 106 - AUTOMOTIVE PROGRAM ORIENTATION

Introduction to the Automotive program. Provides an introduction of the fundamental principles of automotive shop safety and tool care. Guidance given on the self-paced course format. This course is required prior to taking any automotive course. This is a three-day, intensive course that is only taught at the beginning of each term. Permissible to be taken in a term along with other automotive courses. Recommended preparation: or to be taken with AUT 101, AUT 107, AUT 110, AUT 115, and MTH 020 or higher or minimum placement into MTH 060.

Credits: 1 Lecture: 1

AUT 107 - MECHANICAL SYSTEMS I

Provides an understanding of the fundamental principles of automotive shop safety and tool care. Develops mechanical knowledge and skills utilized throughout a career in the automotive field. Includes techniques of routine vehicle maintenance. Includes customer vehicle identification and handling, new vehicle pre-delivery inspection and preparation, safety inspection, lubrication tasks, and light line tasks. A self-paced course. Prerequisites with concurrency: AUT 106.

Credits: 3 Lab: 9

AUT 110 - SMALL GAS ENGINES

Designed to study and apply the theory, operation, diagnoses and repair of small gas engines and their use in the world today. A self-paced course. Prerequisites with concurrency: AUT 106.

Credits: 3 Lab: 9

AUT 111 - COMPUTERIZED ENGINE CONTROLS

Studies advanced electrical systems found on late-model vehicles. Provides solid understanding of computerized automotive engine control systems and how they operate and the ability to diagnose, troubleshoot and repair computerized engine control systems. Prerequisites: AUT 205.

Credits: 5 Lecture: 2 Lab: 9

AUT 112 - BASIC ENGINE PERFORMANCE I

This course is designed to study and apply the theory, operation, diagnoses and repair of the points-type ignition and carburetion systems as they were used in vehicles of the past. Prerequisites: AUT 101, AUT 106, AUT 107, AUT 110 and AUT 115.

Credits: 1 Lab: 2

AUT 113 - BASIC ENGINE PERFORMANCE II

Designed to continue the study and apply the theory presented in AUT 112 Basic Engine Performance I. Continues with the operation, diagnoses, and repair of the carburetion system as it was used in vehicles of the past. Prerequisites: AUT 101, AUT 106, AUT 107, AUT 110 and AUT 115.

Credits: 1 Other: 2

AUT 114 - WELDING FOR THE AUTOMOTIVE TRADE

Provides a basic understanding of the fundamental principles of automotive fabrication, including safety topics. Topics introduce students to focused areas that are required when replacing vehicle components that include a light level of fabrication. (A scheduled self-paced course). Prerequisites: AUT 101, AUT 106, AUT 107, AUT 110, and AUT 115.

Credits: 3 Lab: 9

AUT 115 - COLLEGE SUCCESS FOR AUTOMOTIVE TECHNOLOGY

Prepares students for successful completion of the Automotive Technology degree at COCC and explores careers as an automotive technician and professional. Offers a condensed version of the College Success course geared toward the two Automotive Technology degrees and/or the multiple Automotive Certificates. Introduces the various automotive information systems, hand tool usage, Scan Tool introduction, and resume preparation. Prerequisites with concurrency: AUT 106. Recommended preparation: or to be taken with MTH 020 or higher or minimum placement into MTH 060.

Credits: 2 Lecture: 2

AUT 199 - SELECTED TOPICS: AUTOMOTIVE

This course is in development.

Credits: 1 to 4

AUT 201 - AUTOMOTIVE ENGINES

Provides information on the construction, operation and design of the internal combustion engine. Teaches the concepts and procedures of engine work to cover the proper procedure in rebuilding a four-cycle internal combustion engine. Includes a combination of guided lecture and laboratory applications, stressing safety, accuracy of measure, proper usage of tools, and application of repair manuals through actual overhaul of engines. Prerequisites: AUT 101, AUT 106, AUT 107, AUT 110 and AUT 115. Recommended preparation: MTH 020 or higher or minimum placement into MTH 060.

Credits: 4 Lecture: 2 Lab: 6

AUT 202 - MANUAL DRIVE TRAINS I

A self-paced course that studies standard transmissions and transaxles. Students will learn on college-owned components. The students will learn operating principles, diagnosis, construction, approved repair procedures, and overhaul of current transmission types on manual transmissions and transaxles. Prerequisites: AUT 101, AUT 106, AUT 107, AUT 110 and AUT 115. Recommended preparation: MTH 020 or higher or minimum placement into MTH 060.

Credits: 3 Lab: 9

AUT 203 - MANUAL DRIVE TRAINS II

Second part of a manual transmission sequence. A study of standard transmission and the relationship to clutches, driveshafts, rear axle assembly, transaxle, shift controls and four-wheel drive components. Students will learn on college-owned components. The student will learn operating principles, diagnosis and approved repair procedures on manual transmissions and related power train components. Includes emphasis on diagnosis, service, and procedure to conform to current service manuals. Prerequisites: AUT 202.

Credits: 3 Lecture: 1.2 Lab: 6

AUT 204 - STEERING AND SUSPENSION

Designed to study and apply the theory, operation, diagnoses and repair of the modern suspension and steering systems. Prerequisites: AUT 101, AUT 106, AUT 107, AUT 110 and AUT 115. Recommended preparation: AUT 208.

Credits: 3 Lecture: 1.2 Lab: 6

AUT 205 - ENGINE PERFORMANCE I

Studies the diagnosis of drivability problems. Covers engine analysis, cooling and exhaust systems, ignition and fuel management systems. Prerequisites: AUT 103.

Credits: 2 Lecture: 1 Lab: 3

AUT 206 - ENGINE PERFORMANCE II

Studies diagnosis of drivability problems. Includes further study of engine analysis, ignition and fuel management systems, and super performance diagnosis. Provides the technician with a look into the causes of automotive emissions in relation to vehicles that are four years old and newer. Looks at various methods of emissions inspection/maintenance testing, the diagnosis of failed vehicles, and enhanced on-board computer systems. Also covers the testing of alternative-fuel vehicles. Prerequisites: AUT 111.

Credits: 2 Lecture: 1 Lab: 3

AUT 208 - AUTOMOTIVE BRAKES

Studies the theory, operation, diagnosis and repair of the modern braking systems of both domestic and import vehicles. Includes an introduction to anti-lock brake systems. Prerequisites: AUT 101, AUT 106, AUT 107, AUT 110 and AUT 115. Recommended preparation: MTH 020 or higher or minimum placement into MTH 060.

Credits: 3 Lecture: 1.2 Lab: 6

AUT 211 - ASE TEST PREP I

This self-paced, program-specific course allows the student to study in preparation for the ASE A1-A5 areas. Recommended preparation: completion of two terms of Automotive Technology curriculum and WR 060.

Credits: 1 Lab: 3

AUT 212 - ASE TEST PREP II

This self-paced, program-specific course allows the student to study in preparation for the ASE A6-A8 areas. Recommended preparation: completion of two terms of Automotive Technology curriculum and WR 060.

Credits: 1 Lab: 3

AUT 216 - CO-OP WORK EXPERIENCE AUTOMOTIVE

Provides an environment in which students can begin to recognize their strengths and limitations in their chosen career. The student is placed in an actual job environment where pressure, production and personalities are experienced. Cooperative Work Experience is a program requirement for students in the Automotive Technology program. Two CWE sections are required for the student who will achieve the Master Automotive Technician Certificate. Prerequisites: completion of two terms of Automotive Technology curriculum.

Credits: 1 to 4

AUT 216A - CWE AUTOMOTIVE A

The student is provided with the environment in which he/she can begin to recognize his/her strengths and limitations in their chosen career. The student is placed in an actual job environment where the experiences of pressure, production, and personalities are experienced. Cooperative Work Experience, is a program requirement for students in the Automotive Technology Program. Two CWE sections are required for the student who will achieve the Master Automotive Technician Certificate. 4 credits per section (144 hours). Prerequisites: instructor approval. Recommended preparation: at least 24 credits of automotive courses.

Credits: 4

AUT 216B - CWE AUTOMOTIVE B

The student is provided with the environment in which he/she can begin to recognize his/her strengths and limitations in their chosen career. The student is placed in an actual job environment where the experiences of pressure, production, and personalities are experienced. Cooperative Work Experience, is a program requirement for students in the Automotive Technology Program. Two CWE sections are required for the student who will achieve the Master Automotive Technician Certificate. 4 credits per section (144 hours). Prerequisites: instructor approval. Recommended preparation: at least 24 credits of automotive courses.

Credits: 4

AUT 251 - AUTOMATIC TRANSMISSIONS I

Provides an understanding of the basic principles and theory of planetary gear sets, torque converters and hydraulic controls as applied to automatic transmissions. Includes construction, operation and overhaul

of current transmission types with emphasis on diagnosis, service and procedures to conform to current service manuals. A self-paced course. Prerequisites: AUT 203.

Credits: 3 Lab: 9

AUT 253 - AUTOMOTIVE AIR CONDITIONING

A hands-on study of automotive air conditioning and heating systems, concurrent with EPA Recovery Requirements for R-12, R-134a systems, diagnosis and service. A study of advanced electrical systems found on late-model vehicles. Prerequisites: AUT 102. Recommended preparation: MTH 020 or higher or minimum placement into MTH 060.

Credits: 3 Lecture: 1.2 Lab: 6

AUT 256 - AUTOMATIC TRANSMISSIONS II

This is the second part of an automatic transmission sequence. This course will continue principles and theory of planetary gear sets, torque converters, and hydraulic controls as applied to automatic transmissions. Includes emphasis on diagnosis, service, and procedures to conform to current service manuals. The student will also be introduced to Constant Velocity Transmissions/Hybrid Electric Vehicles/Electric Vehicle type transmissions. Prerequisites: AUT 251.

Credits: 2 Lecture: 1 Lab: 3

AUT 260 - DIESEL PERFORMANCE II

This is the second part of a diesel performance sequence. This course will provide the operational principles and theory of: Hydraulically actuated Electronically controlled Unit Injection ** (HEUI) systems, the Electronic Unit Injection * (EUI) systems, and the Common Rail (CR) systems, as they are applied to Diesel Engine Performance. The course will include, in depth, Controller Area Networking (CAN), multiplexing, Controller Area Networking (CAN C) language (J1939 protocol), Software Updates, (J2534 re-flash), Vehicle Communication Interface (VCI), Selective Catalytic Reduction (SCR), Exhaust Gas Recirculation (EGR) systems, Variable Geometry Turbo-chargers (VGT), Constant Geometry Turbo-chargers (CGT) systems, Diesel Particulate Filter (DPF) variations, Diesel Oxidation Catalyst (DOC) systems, and diagnostic strategies, that will lead to accurate conclusions. The student will be exposed to multiple vehicle product lines during this course and will be introduced to the proper techniques and procedures to repair them. Prerequisites: AUT 206.

Credits: 4 Lecture: 2 Lab: 6

AUT 270 - AUTOMOTIVE CONTROLLER SYSTEMS I

Technological advancements in modern vehicles have changed how we perform diagnosis. This course examines various methods of those enhancements of automotive drive systems, with major emphasis on electronic programming, and how to accurately repair them, using computers and scan tools. This course will require the student technician to build on current diagnostic routines into advanced applications. Prerequisites: AUT 206.

Credits: 4 Lecture: 2 Lab: 6

AUT 271 - AUTOMOTIVE CONTROLLER SYSTEMS II

Vehicle performance is enhanced by a variety of methods. This course examines various methods of performance enhancements of automotive drive systems with major emphasis on electronic programming. Manufacturer scan tools will be included with vehicle testing. Prerequisites: AUT 206. Recommended preparation: AUT 270.

Credits: 4 Lecture: 2 Lab: 6

AUT 280 - HYBRID ELECTRIC VEHICLES I

A study of HEV (hybrid electric vehicles) and EV (electric vehicles). Safety procedures will be strongly emphasized. Vehicle systems that will be covered: Hybrid safety and service procedures, introduction to hybrid batteries and service, introduction to hybrid electric motors, generators, and controls, regenerative braking systems, introduction to hybrid vehicle transmissions and transaxles, hybrid vehicle heating and air conditioning, first responder safety and procedures, introduction to manufacturer scan tools, hybrid vehicle diagnostic trouble codes. Prerequisites: AUT 206.

Credits: 4 Lecture: 2 Lab: 6

AUT 281 - HYBRID ELECTRIC VEHICLES II

A study of HEV (hybrid electric vehicles) and EV (electric vehicles) part 2. Safety procedures will be strongly emphasized. Vehicle systems that will be covered include: Hybrid safety and service procedures, advanced hybrid batteries testing and service, advanced testing of hybrid electric motors, generators, and controls along with extensive manufacturer scan tools use and vehicle testing. Prerequisites: AUT 206. Recommended preparation: AUT 280.

Credits: 4 Lecture: 2 Lab: 6

AVIATION

AV 101 - INTRODUCTION TO AVIATION

This course introduces the student to the Federal Aviation Regulations/ Aeronautical Information Manual (FAR/AIM). Designed to build an understanding of the pilot credentials required for a career in aviation and help students explore various career options. A variety of employment opportunities are investigated, including commercial, business, corporate, military and general aviation-related business. Emphasis will be given to careers in operations and flight technology. Airplane and helicopter pilot careers will be emphasized.

Credits: 3 Lecture: 3

AV 104 - INTRODUCTION TO AIRCRAFT SYSTEMS

Introduces the student to the training aircraft that are used in general aviation, and will look in detail at those aircraft used in this program. Aircraft in current use for training by industry will be studied and emphasis placed on basic aircraft systems operations, including emergencies. Applicable Federal Aviation Regulations, including the use of Minimum Equipment Lists, will be studied.

Credits: 4 Lecture: 4

AV 108 - METEOROLOGY I

A survey course in atmospheric science that covers weather basics and atmospheric circulations. Included is a systematic development of the following: the atmosphere, energy and temperature, wind, atmospheric moisture, horizontal and vertical pressure patterns, clouds, atmospheric circulation, stability, air masses, fronts, fog, icing, thunderstorms, jet streams and turbulence. Students will study surface weather observations, routine weather reports and forecasts, surface maps and constant pressure maps.

Credits: 4 Lecture: 4

AV 110 - PRIVATE PILOT - AIRPLANE

Provides initial ground instruction in aeronautical skills and knowledge for the FAA Private Pilot certificate. Involves an introduction to fundamentals of flight, aerodynamics, flight operations, airspace, weather and weather products, flight planning, decision-making, human factors, human factors in aviation, and crew resource management. Comprehensive course that prepares student for the FAA Private Pilot airman knowledge written exam. Recommended preparation: MTH 020 or higher.

Credits: 5 Lecture: 5

AV 112 - TECHNICALLY ADVANCED AIRCRAFT

The course covers the differences in design, handling characteristics, capability and operation of complex avionics packages in today's modern aircraft. Course will concentrate on the Garmin 430, Garmin 500, Garmin 750, and Garmin 100 glass cockpit systems.

Credits: 1 Lecture: 1

AV 112A - TECHNICALLY ADVANCED AIRCRAFT LAB

The lab course provides one-on-one hands-on training in a simulator using the (FAA)-Industry Training Standards (FITS) program that emphasizes the importance of "real world" training exercises in the form of scenario training. Students will learn to program and utilize advance automated flight decks. P/NP grading.

Credits: 1 Lab: 3.2