

# AUTOMOTIVE

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

<b>AUT 110</b>	<b>Intro to Auto Technology</b>	2	2	3
Prerequisites:	None			
Corequisites:	None			

This course covers workplace safety, hazardous material and environmental regulations, use of hand tools, service information resources, basic concepts, systems, and terms of automotive technology. Topics include familiarization with vehicle systems along with identification and proper use of various automotive hand and power tools. Upon completion, students should be able to describe safety and environmental procedures, terms associated with automobiles, identify and use basic tools and shop equipment.

*Effective Term – Summer 1997 [1997\*02]*

AUT 110	Intro to Auto Technology	2	2	3
Prerequisites:	None			
Corequisites:	None			

This course covers the basic concepts and terms of automotive technology, workplace safety, North Carolina state inspection, safety and environmental regulations, and use of service information resources. Topics include familiarization with components along with identification and proper use of various automotive hand and power tools. Upon completion, students should be able to describe terms associated with automobiles, identify and use basic tools and shop equipment, and conduct North Carolina safety/emissions inspections.

*End Term - Summer 2008 [2008\*02] - CRC 09/20/06*

*Effective Term – Summer 1997 [1997\*02]*

AUT 111	Basic Auto Technology	1	2	2
Prerequisites:	None			
Corequisites:	None			

This course introduces basic concepts, terms, workplace safety, regulations, and service information relating to automotive technology. Emphasis is placed on developing familiarity with automotive components along with basic identification and proper use of various hand and power tools and shop equipment. Upon completion, students should be able to define and use terms associated with automobiles and identify and use basic tools and shop equipment.

*End Term - Summer 2008 [2008\*02] - CRC 09/20/06*

*Effective Term – Summer 1997 [1997\*02]*

AUT 112	Auto Shop Management	1	2	2
Prerequisites:	None			
Corequisites:	None			

This course covers principles of management essential to decision making, communication, authority, and leadership. Topics include shop supervision, customer relations, cost effectiveness, and workplace ethics. Upon completion, students should be able to describe basic automotive shop operation from a management standpoint.

**AUT 112 is replaced by AUT 212 per CRC 09/20/06.**

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

<b>AUT 113</b>	<b>Automotive Servicing 1</b>	0	6	2
Prerequisites:	None			
Corequisites:	None			

This course is a lab used as an alternative to co-op placement. Emphasis is placed on shop operations, troubleshooting, testing, adjusting, repairing, and replacing components using appropriate test equipment and service information. Upon completion, students should be able to perform a variety of automotive repairs using proper service procedures and to operate appropriate equipment.

*Effective Term – Summer 1997 [1997\*02]*

AUT 113	Automotive Servicing	2	6	4
Prerequisites:	None			
Corequisites:	None			

This course covers diagnostic procedures necessary to determine the nature and cause of auto service problems and the procedures used to repair/replace components. Emphasis is placed on troubleshooting, testing, adjusting, repairing, and replacing components using appropriate test equipment and service information. Upon completion, students should be able to perform a variety of automotive repairs using proper service procedures and operate appropriate equipment.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

<b>AUT 114</b>	<b>Safety and Emissions</b>	1	2	2
Prerequisites:	None			
Corequisites:	None			

This course covers the laws, procedures, and specifications needed to perform a North Carolina State Safety and Emissions inspection. Topics include brake, steering and suspension, lighting, horn, windshield wiper, tire, mirrors, and emission control devices inspection. Upon completion, students should be able to perform complete and thorough North Carolina State Safety and Emissions inspections.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

<b>AUT 114A</b>	<b>Safety and Emissions Lab</b>	0	2	1
Prerequisites:	None			
Corequisites:	AUT 114			

This course is an optional lab that allows students to enhance their understanding of North Carolina State Emissions Inspection failures. Topics include evaporative, positive crankcase ventilation, exhaust gas recirculation and exhaust emissions systems operation, including catalytic converter failure diagnosis. Upon completion, students should be able to employ diagnostic strategies to repair vehicle emissions failures resulting from North Carolina State Emissions inspection.

*End Term - Summer 2008 [2008\*02] - CRC 09/20/06*

*Effective Term – Summer 1997 [1997\*02]*

AUT 115	Engine Fundamentals	2	3	3
Prerequisites:	None			
Corequisites:	None			

This course covers the theory, construction, inspection, diagnosis, and repair of internal combustion engines and related systems. Topics include fundamental operating principles of engines and diagnosis, inspection, adjustment, and repair of automotive engines using appropriate service information. Upon completion, students should be able to perform basic diagnosis/repair of automotive engines using appropriate tools, equipment, procedures, and service information.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

<b>AUT 116</b>	<b>Engine Repair</b>	2	3	3
Prerequisites:	None			
Corequisites:	None			

This course covers the theory, construction, inspection, diagnosis, and repair of internal combustion engines and related systems. Topics include fundamental operating principles of engines and diagnosis, inspection, adjustment, and repair of automotive engines using appropriate service information. Upon completion, students should be able to perform basic diagnosis, measurement and repair of automotive engines using appropriate tools, equipment, procedures, and service information.

*Effective Term – Summer 1997 [1997\*02]*

AUT 116	Engine Repair	1	3	2
Prerequisites:	None			
Corequisites:	None			

This course covers service/repair/rebuilding of block, head, and internal engine components. Topics include engine repair/reconditioning using service specifications. Upon completion, students should be able to rebuild/recondition an automobile engine to service specifications.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

<b>AUT 116A</b>	<b>Engine Repair Lab</b>	0	3	1
Prerequisites:	None			
Corequisites:	AUT 116			

This course is an optional lab to be used as an alternative to co-op placement in meeting the NATEF standards for total hours. Topics include diagnosis, inspection, adjustment, and repair of automotive engines using appropriate service information. Upon completion, students should be able to perform basic diagnosis, measurement and repair of automotive engines using appropriate tools, equipment, procedures, and service information.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

<b>AUT 123</b>	<b>Powertrain Diagn &amp; Serv</b>	1	3	2
Prerequisites:	None			
Corequisites:	None			

This course covers the diagnosis, repair and service of the vehicle powertrain and related systems. Topics include fundamental operating principles of engines and transmissions and use of proper service procedures for diagnosis, service and removal and replacement of major components. Upon completion, students should be able to perform basic service and diagnosis of the powertrain and related systems, and to perform in vehicle repairs and remove and replace components.

*End Term - Summer 2008 [2008\*02] - CRC 09/20/06*

*Effective Term – Summer 1997 [1997\*02]*

AUT 131	Drive Trains	2	3	3
Prerequisites:	None			
Corequisites:	None			

This course introduces principles of operation of basic automotive drive trains. Emphasis is placed on manual and automatic transmissions, transaxles, and final drive components. Upon completion, students should be able to describe, diagnose, and determine needed service and repairs.

*End Term - Summer 2008 [2008\*02] - CRC 09/20/06*

*Effective Term – Summer 2003 [2003\*02] – CRC 3/12/03*

AUT 132	Drive Trains Lab	0	3	1
Prerequisites:	None			
Corequisites:	AUT 131			

This course provides a laboratory setting to enhance the skills for diagnosing and repairing automotive drive trains. Emphasis is placed on practical experiences that enhance the topics presented in AUT 131. Upon completion, students should be able to apply the laboratory experiences to the concepts presented in AUT 131.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

<b>AUT 141</b>	<b>Suspension &amp; Steering Sys</b>	2	3	3
Prerequisites:	None			
Corequisites:	None			

This course covers principles of operation, types, and diagnosis/repair of suspension and steering systems to include steering geometry. Topics include manual and power steering systems and standard and electronically controlled suspension and steering systems. Upon completion, students should be able to service and repair steering and suspension components, check and adjust alignment angles, repair tires, and balance wheels.

*Effective Term – Summer 1997 [1997\*02]*

AUT 141	Suspension & Steering Sys	2	4	4
Prerequisites:	None			
Corequisites:	None			

This course covers principles of operation, types, and diagnosis/repair of suspension and steering systems to include steering geometry. Topics include manual and power steering systems and standard and electronically controlled suspension and steering systems. Upon completion, students should be able to service and repair various steering and suspension components, check and adjust various alignment angles, and balance wheels.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

<b>AUT 141A</b>	<b>Suspension &amp; Steering Lab</b>	0	3	1
Prerequisites:	None			
Corequisites:	AUT 141			

This course is an optional lab to be used as an alternative to co-op placement in meeting the NATEF standards for total hours. Topics include manual and power steering systems and standard and electronically controlled suspension and steering systems. Upon completion, students should be able to service and repair steering and suspension components, check and adjust alignment angles, repair tires, and balance wheels.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

**AUT 151 Brake Systems** 2 3 3  
 Prerequisites: None  
 Corequisites: None

This course covers principles of operation and types, diagnosis, service, and repair of brake systems. Topics include drum and disc brakes involving hydraulic, vacuum boost, hydra-boost, electrically powered boost, and anti-lock and parking brake systems. Upon completion, students should be able to diagnose, service, and repair various automotive braking systems.

*Effective Term – Summer 1997 [1997\*02]*

AUT 151 Brake Systems 2 2 3  
 Prerequisites: None  
 Corequisites: None

This course covers principles of operation and types, diagnosis, service, and repair of brake systems. Topics include drum and disc brakes involving hydraulic, vacuum boost, hydra-boost, electrically powered boost, and anti-lock and parking brake systems. Upon completion, students should be able to diagnose, service, and repair various automotive braking systems.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

**AUT 151A Brakes Systems Lab** 0 3 1  
 Prerequisites: None  
 Corequisites: AUT 151

This course is an optional lab to be used as an alternative to co-op placement in meeting the NATEF standards for total hours. Topics include drum and disc brakes involving hydraulic, vacuum-boost, hydra-boost, electrically powered boost, and anti-lock, parking brake systems and emerging brake systems technologies. Upon completion, students should be able to diagnose, service, and repair various automotive braking systems.

*End Term - Summer 2008 [2008\*02] - CRC 09/20/06*

*Effective Term – Summer 1997 [1997\*02]*

AUT 152 Brake Systems Lab 0 2 1  
 Prerequisites: None  
 Corequisites: AUT 151

This course provides a laboratory setting to enhance brake system skills. Emphasis is placed on practical experiences that enhance the topics presented in AUT 151. Upon completion, students should be able to apply the laboratory experiences to the concepts presented in AUT 151.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

**AUT 161 Basic Auto Electricity** 4 3 5  
 Prerequisites: None  
 Corequisites: None

This course covers basic electrical theory, wiring diagrams, test equipment, and diagnosis, repair, and replacement of batteries, starters, and alternators. Topics include Ohm’s Law, circuit construction, wiring diagrams, circuit testing, and basic troubleshooting. Upon completion, students should be able to properly use wiring diagrams, diagnose, test, and repair basic wiring, battery, starting, charging, and electrical concerns.

*Effective Term – Summer 1997 [1997\*02]*

AUT 161	Electrical Systems	2	6	4
Prerequisites:	None			
Corequisites:	None			

This course covers basic electrical theory and wiring diagrams, test equipment, and diagnosis/repair/replacement of batteries, starters, alternators, and basic electrical accessories. Topics include diagnosis and repair of battery, starting, charging, lighting, and basic accessory systems problems. Upon completion, students should be able to diagnose, test, and repair the basic electrical components of an automobile.

*End Term - Summer 2008 [2008\*02] - CRC 09/20/06*

*Effective Term – Summer 1997 [1997\*02]*

AUT 162	Chassis Elect & Electronics	2	2	3
Prerequisites:	None			
Corequisites:	None			

This course covers electrical/electronic diagnosis/repair, including wiring diagrams, instrumentation, and electronic/computer-controlled devices and accessories. Topics include interpreting wiring diagrams and diagnosis and repair of chassis electrical and electronic systems. Upon completion, students should be able to read and interpret wiring diagrams and determine/perform needed repairs on chassis electrical and electronic systems.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

<b>AUT 163</b>	<b>Adv Auto Electricity</b>	2	3	3
Prerequisites:	AUT 161			
Corequisites:	None			

This course covers electronic theory, wiring diagrams, test equipment, and diagnosis, repair, and replacement of electronics, lighting, gauges, horn, wiper, accessories, and body modules. Topics include networking and module communication, circuit construction, wiring diagrams, circuit testing, and troubleshooting. Upon completion, students should be able to properly use wiring diagrams, diagnose, test, and repair wiring, lighting, gauges, accessories, modules, and electronic concerns.

*Effective Term – Summer 1997 [1997\*02]*

AUT 163	Chassis Elec & Elect Lab	0	2	1
Prerequisites:	None			
Corequisites:	AUT 162			

This course provides a laboratory setting to enhance chassis electrical and electronic system skills. Emphasis is placed on practical experiences that enhance the topics presented in AUT 162. Upon completion, students should be able to apply the laboratory experiences to the concepts presented in AUT 162.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

<b>AUT 163A</b>	<b>Adv Auto Electricity Lab</b>	0	3	1
Prerequisites:	None			
Corequisites:	AUT 163			

This course is an optional lab to be used as an alternative to co-op placement in meeting the NATEF standards for total hours. Topics include networking and module communication, circuit construction, wiring diagrams, circuit testing, troubleshooting and emerging electrical/electronic systems technologies. Upon completion, students should be able to properly use wiring diagrams, diagnose, test, and repair wiring, lighting, gauges, accessories, modules, and electronic concerns.

*End Term - Summer 2008 [2008\*02] - CRC 09/20/06*

*Effective Term – Summer 1997 [1997\*02]*

AUT 164	Automotive Electronics	2	2	3
Prerequisites:	None			
Corequisites:	None			

This course covers fundamentals of electrical/electronic circuitry, semi-conductors, and microprocessors. Topics include Ohm’s law, circuits, AC/DC current, solid state components, digital applications, and the use of digital multimeters. Upon completion, students should be able to apply Ohm’s law to diagnose and repair electrical/electronic circuits using digital multimeters and appropriate service information.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

<b>AUT 171</b>	<b>Auto Climate Control</b>	2	4	4
Prerequisites:	None			
Corequisites:	None			

This course covers the theory of refrigeration and heating, electrical/electronic/pneumatic controls, and diagnosis/repair of climate control systems. Topics include diagnosis and repair of climate control components and systems, recovery/recycling of refrigerants, and safety and environmental regulations. Upon completion, students should be able to describe the operation, diagnose, and safely service climate control systems using appropriate tools, equipment, and service information.

*Effective Term – Summer 1997 [1997\*02]*

AUT 171	Heating & Air Conditioning	2	3	3
Prerequisites:	None			
Corequisites:	None			

This course covers the theory of refrigeration and heating, electrical/electronic/pneumatic controls, and diagnosis/repair of climate control systems. Topics include diagnosis and repair of climate control components and systems, recovery/recycling of refrigerants, and safety and environmental regulations. Upon completion, students should be able to describe the operation, diagnose, and safely service climate control systems using appropriate tools, equipment, and service information.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

<b>AUT 181</b>	<b>Engine Performance 1</b>	2	3	3
Prerequisites:	None			
Corequisites:	None			

This course covers the introduction, theory of operation, and basic diagnostic procedures required to restore engine performance to vehicles equipped with complex engine control systems. Topics include an overview of engine operation, ignition components and systems, fuel delivery, injection components and systems and emission control devices. Upon completion, students should be able to describe operation and diagnose/repair basic ignition, fuel and emission related driveability problems using appropriate test equipment/service information.

*Effective Term – Summer 1997 [1997\*02]*

AUT 181	Engine Performance-Electrical	2	3	3
Prerequisites:	None			
Corequisites:	None			

This course covers the principles, systems, and procedures required for diagnosing and restoring engine performance using electrical/electronics test equipment. Topics include procedures for diagnosis and repair of ignition, emission control, and related electronic systems. Upon completion, students should be able to describe operation of and diagnose/repair ignition/emission control systems using appropriate test equipment and service information.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

<b>AUT 181A</b>	<b>Engine Performance 1 Lab</b>	0	3	1
Prerequisites:	None			
Corequisites:	AUT 181			

This course is an optional lab to be used as an alternative to co-op placement in meeting the NATEF standards for total hours. Topics include overviews of engine operation, ignition components and systems, fuel delivery, injection components and systems and emission control devices and emerging engine performance technologies. Upon completion, students should be able to describe operation and diagnose/repair basic ignition, fuel and emission related driveability problems using appropriate test equipment/service information.

*End Term - Summer 2008 [2008\*02] - CRC 09/20/06*

*Effective Term – Summer 1997 [1997\*02]*

AUT 182	Engine Perfor-Elec Lab	0	3	1
Prerequisites:	None			
Corequisites:	AUT 181			

This course provides a laboratory setting to enhance the skills for diagnosing and restoring engine performance using electrical/electronics test equipment. Emphasis is placed on practical experiences that enhance the topics presented in AUT 181. Upon completion, students should be able to apply the laboratory experiences to the concepts presented in AUT 181.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

<b>AUT 183</b>	<b>Engine Performance 2</b>	2	6	4
Prerequisites:	AUT 181			
Corequisites:	None			

This course covers study of the electronic engine control systems, the diagnostic process used to locate engine performance concerns, and procedures used to restore normal operation. Topics will include currently used fuels and fuel systems, exhaust gas analysis, emission control components and systems, OBD II (on-board diagnostics) and inter-related electrical/electronic systems. Upon completion, students should be able to diagnose and repair complex engine performance concerns using appropriate test equipment and service information.

		Class	Lab	Credit
<i>Effective Term – Summer 1997 [1997*02]</i>				
AUT 183	Engine Performance-Fuels	2	3	3
Prerequisites:	None			
Corequisites:	None			

This course covers the principles of fuel delivery/management, exhaust/emission systems, and procedures for diagnosing and restoring engine performance using appropriate test equipment. Topics include procedures for diagnosis/repair of fuel delivery/management and exhaust/emission systems using appropriate service information. Upon completion, students should be able to describe, diagnose, and repair engine fuel delivery/management and emission control systems using appropriate service information and diagnostic equipment.

*End Term - Summer 2008 [2008\*02] - CRC 09/20/06*

<i>Effective Term – Summer 1997 [1997*02]</i>				
AUT 184	Engine Perfor-Fuels Lab	0	3	1
Prerequisites:	None			
Corequisites:	AUT 183			

This course provides a laboratory setting to enhance the skills for diagnosing and repairing fuel delivery/management and emission systems. Emphasis is placed on practical experiences that enhance the topics presented in AUT 183. Upon completion, students should be able to apply the laboratory experiences to the concepts presented in AUT 183.

*End Term - Summer 2008 [2008\*02] - CRC 09/20/06*

<i>Effective Term – Summer 1997 [1997*02]</i>				
AUT 185	Emission Controls	1	2	2
Prerequisites:	None			
Corequisites:	None			

This course covers the design and function of emission control devices. Topics include chemistry of combustion as well as design characteristics and emission control devices which limit tailpipe, crankcase, and evaporative emissions. Upon completion, students should be able to troubleshoot, test, and service emission control systems.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

<b>AUT 186</b>	<b>PC Skills for Auto Techs</b>	2	2	3
Prerequisites:	None			
Corequisites:	None			

This course introduces students to personal computer literacy and Internet literacy with an emphasis on the automotive service industry. Topics include service information systems, management systems, computer-based systems, and PC based diagnostic equipment. Upon completion, students should be able to access information pertaining to automotive technology and perform word processing.

*Effective Term – Summer 1997 [1997\*02]*

AUT 186	Automotive Computer Appl	1	2	2
Prerequisites:	None			
Corequisites:	None			

This course introduces computer operating systems, word processing, and electronic automotive service information systems. Emphasis is placed on operation systems, word processing, and electronic automotive service information systems. Upon completion, students should be able to use an operating system to access information pertaining to automotive technology and perform word processing.

*Effective Term – Summer 1997 [1997\*02]*

**AUT 211 Automotive Machining**

2 6 4

Prerequisites: None

Corequisites: None

This course covers engine machining processes for remanufacturing automotive engines. Emphasis is placed on cylinder head service, machining block surfaces, reconditioning connecting rod assemblies, camshafts, flywheels, and precision measurement. Upon completion, students should be able to explain the operation and proper use of automotive machining equipment.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

**AUT 212 Auto Shop Management**

3 0 3

Prerequisites: None

Corequisites: None

This course covers the principals of management essential to decision-making, communication, authority, and leadership. Topics include shop supervision, shop organization, customer relations, cost effectiveness and work place ethics. Upon completion, students should be able to describe basic automotive shop operation from a management standpoint.

**AUT 212 replaces AUT 112 per CRC 09/20/06.**

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

**AUT 213 Automotive Servicing 2**

1 3 2

Prerequisites: None

Corequisites: None

This course is a lab used as an alternative to co-op placement. Emphasis is placed on shop operations, troubleshooting, testing, adjusting, repairing, and replacing components using appropriate test equipment and service information. Upon completion, students should be able to perform a variety of automotive repairs using proper service procedures and to operate appropriate equipment.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

**AUT 221 Auto Transm/Transaxles**

2 3 3

Prerequisites: None

Corequisites: None

This course covers operation, diagnosis, service, and repair of automatic transmissions/transaxles. Topics include hydraulic, pneumatic, mechanical, and electrical/electronic operation of automatic drive trains and the use of appropriate service tools and equipment. Upon completion, students should be able to explain operational theory, diagnose and repair automatic drive trains.

*Effective Term – Summer 1997 [1997\*02]*

**AUT 221 Automatic Transmissions**

2 6 4

Prerequisites: None

Corequisites: None

This course covers operation, diagnosis, service, and repair of automatic transmissions/transaxles. Topics include hydraulic, pneumatic, mechanical, and electrical/electronic operation of automatic drive trains and the use of appropriate service tools and equipment. Upon completion, students should be able to explain operational theory and diagnose and repair automatic drive trains.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

<b>AUT 221A</b>	<b>Auto Transm/Transax Lab</b>	0	3	1
Prerequisites:	None			
Corequisites:	AUT 221			

This course is an optional lab to be used as an alternative to co-op placement in meeting the NATEF standards for total hours. Topics include hydraulic, pneumatic, mechanical, and electrical/electronic operation of automatic drive trains and the use of appropriate service tools and equipment. Upon completion, students should be able to diagnose and repair automatic drive trains.

*End Term - Summer 2008 [2008\*02] - CRC 09/20/06*

<i>Effective Term – Summer 1997 [1997*02]</i>				
AUT 222	Adv Auto Drive Trains	2	2	3
Prerequisites:	None			
Corequisites:	None			

This course covers advanced diagnosis and repair of automatic drive trains. Topics include testing of sensors, actuators, and control modules using on-board diagnostics, appropriate service information, and equipment. Upon completion, students should be able to perform advanced automatic drive train diagnosis and repair.

*Effective Term – Spring 2008 [2008\*01] – CRC 09/12/07*

<b>AUT 231</b>	<b>Man Trans/Axles/Drtrains</b>	2	3	3
Prerequisites:	None			
Corequisites:	None			

This course covers the operation, diagnosis, and repair of manual transmissions/transaxles, clutches, driveshafts, axles, and final drives. Topics include theory of torque, power flow, and manual drive train service and repair using appropriate service information, tools, and equipment. Upon completion, students should be able to explain operational theory, diagnose and repair manual drive trains.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

AUT 231	Man Trans/Axles/Drtrains	2	4	4
Prerequisites:	None			
Corequisites:	None			

This course covers the operation, diagnosis, and repair of manual transmissions/transaxles, clutches, driveshafts, axles, and final drives. Topics include theory of torque, power flow, and manual drive train servicing and repair using appropriate service information, tools, and equipment. Upon completion, students should be able to explain operational theory, diagnose and repair manual drive trains.

*Effective Term – Summer 1997 [1997\*02]*

AUT 231	Manual Drive Trains/Axles	2	3	3
Prerequisites:	None			
Corequisites:	None			

This course covers the operation, diagnosis, and repair of manual transmissions/transaxles, clutches, driveshafts, axles, and final drives. Topics include theory of torque, power flow, and manual drive train service and repair using appropriate service information, tools, and equipment. Upon completion, students should be able to explain operational theory and diagnose and repair manual drive trains.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

**AUT 231A Man Trans/Ax/Drtrains Lab**

0 3 1

Prerequisites: None

Corequisites: AUT 231

This course is an optional lab for the program that needs to meet NATEF hour standards but does not have a co-op component in the program. Topics include manual drive train diagnosis, service and repair using appropriate service information, tools, and equipment. Upon completion, students should be able to diagnose and repair manual drive trains.

*End Term - Summer 2008 [2008\*02] - CRC 09/20/06*

*Effective Term – Summer 1997 [1997\*02]*

**AUT 232 Manual Dr Trains/Axles Lab**

0 3 1

Prerequisites: None

Corequisites: AUT 231

This course provides a laboratory setting to enhance the skills for diagnosing and repairing manual transmissions/transaxles, clutches, driveshafts, axles, and final drives. Emphasis is placed on practical experiences that enhance the topics presented in AUT 231. Upon completion, students should be able to apply the laboratory experiences to the concepts presented in AUT 231.

*End Term - Summer 2008 [2008\*02] - CRC 09/20/06*

*Effective Term – Summer 1997 [1997\*02]*

**AUT 241 Adv Chassis/Suspension**

2 6 4

Prerequisites: AUT 141

Corequisites: None

This course provides advanced training in automotive chassis and suspension using computerized two- and four-wheel alignment equipment. Emphasis is placed on suspension and chassis system design, construction, and repair for modern front- and rear-drive vehicles. Upon completion, students should be able to perform necessary adjustments and repairs on vehicles using computerized alignment equipment.

*End Term – Fall 2010 [2010\*03] – SBCC 10/19/07*

*Effective Term – Fall 1997 [1997\*03]*

**AUT 251 Introduction to Racing**

3 0 3

Prerequisites: None

Corequisites: None

This course provides information about working safely in a racing environment, different types of racing, and types of car designs. Topics include shop and track safety and an introduction to the racing environment and various car designs. Upon completion, students should be able to work safely at both the shop and track and understand the various types and costs of racing.

*End Term – Fall 2010 [2010\*03] – SBCC 10/19/07*

*Effective Term – Fall 1997 [1997\*03]*

AUT 252	Racing Engine Preparation	3	9	6
Prerequisites:	AUT 115 and AUT 116			
Corequisites:	None			

This course includes selection and fit of proper engine components to maximize power and reliability in today's racing engines. Topics include component selection, blueprinting, machining of components, cylinder head and block preparation, balancing, matching of heads, intake manifold, and camshaft for maximum power. Upon completion, students should be able to assemble a complete racing engine. *This course is a unique concentration requirement in the Race Car Performance concentration in the Automotive Systems Technology program.*

*End Term – Fall 2010 [2010\*03] – SBCC 10/19/07*

*Effective Term – Fall 1997 [1997\*03]*

AUT 253	Race Engine Accessories	2	4	4
Prerequisites:	AUT 181 and AUT 183			
Corequisites:	AUT 252			

This course provides information on selection and use of components in the ignition, fuel, oiling, and cooling systems. Emphasis will be placed on selecting and installing different types of systems to maximize efficiency for engine power and life. Upon completion, students should be able to install the ignition, fuel, oiling, and cooling systems with modifications necessary for particular applications. *This course is a unique concentration requirement in the Race Car Performance concentration in the Automotive Systems Technology program.*

*End Term – Fall 2010 [2010\*03] – SBCC 10/19/07*

*Effective Term – Fall 2002 [2002\*03] – CRC 10/10/01*

AUT 254	Chassis Fabrication	2	9	5
Prerequisites:	WLD 110 and AUB 134			
Corequisites:	None			

This course is designed to enable students to build a racing chassis following either a prepared blueprint or their own design. Topics include cutting and fitting various types of tubing, and using machines and saws necessary to fabricate the race car components. Upon completion, students should be able to build a racing chassis with the correct geometric angles. *This course is a unique concentration requirement in the Race Car Performance concentration in the Automotive Systems Technology program.*

*Effective Term – Fall 1997 [1997\*03]*

AUT 254	Chassis Fabrication	3	9	6
Prerequisites:	WLD 110 and AUB 134			
Corequisites:	None			

This course is designed to enable students to build a racing chassis following either a prepared blueprint or their own design. Topics include cutting and fitting various types of tubing, and using machines and saws necessary to fabricate the race car components. Upon completion, students should be able to build a racing chassis with the correct geometric angles. *This course is a unique concentration requirement in the Race Car Performance concentration in the Automotive Systems Technology program.*

*End Term – Fall 2010 [2010\*03] – SBCC 10/19/07*  
*Effective Term – Fall 2002 [2002\*03] – CRC 10/10/01*

AUT 255	Sheet Metal Fabrication	1	3	2
Prerequisites:	None			
Corequisites:	AUT 254			

This course is designed to build student’s skills with the various tools and equipment necessary to make interior and exterior sheet metal panels. Emphasis is placed on cutting, bending, and shaping sheet metal into the various parts necessary to build a race car. Upon completion, students should be able to form and fit to the chassis the metal panels made by them or another manufacturer. *This course is a unique concentration requirement in the Race Car Performance concentration in the Automotive Systems Technology program.*

*Effective Term – Fall 1997 [1997\*03]*

AUT 255	Sheet Metal Fabrication	1	6	3
Prerequisites:	None			
Corequisites:	AUT 254			

This course is designed to build student’s skills with the various tools and equipment necessary to make interior and exterior sheet metal panels. Emphasis is placed on cutting, bending, and shaping sheet metal into the various parts necessary to build a race car. Upon completion, students should be able to form and fit to the chassis the metal panels made by them or another manufacturer. *This course is a unique concentration requirement in the Race Car Performance concentration in the Automotive Systems Technology program.*

*End Term – Fall 2010 [2010\*03] – SBCC 10/19/07*  
*Effective Term – Fall 2002 [2002\*03] – CRC 10/10/01*

AUT 256	Setting Up the Race Car	3	6	5
Prerequisites:	AUT 141			
Corequisites:	AUT 254			

This course covers selection of proper chassis, springs, and shocks; and communicating with the driver in order to make necessary adjustments at the track. Topics include selection of springs and shocks; making changes, and keeping proper records of control arm angles, frame height, and chassis travel. Upon completion, students should be able to check tire temperature and shock travel, and explain how changes in the chassis set-up will increase performance. *This course is a unique concentration requirement in the Race Car Performance concentration in the Automotive Systems Technology program.*

*Effective Term – Fall 1997 [1997\*03]*

AUT 256	Setting Up the Race Car	4	4	6
Prerequisites:	AUT 141			
Corequisites:	AUT 254			

This course covers selection of proper chassis, springs, and shocks; and communicating with the driver in order to make necessary adjustments at the track. Topics include selection of springs and shocks; making changes, and keeping proper records of control arm angles, frame height, and chassis travel. Upon completion, students should be able to check tire temperature and shock travel, and explain how changes in the chassis set-up will increase performance. *This course is a unique concentration requirement in the Race Car Performance concentration in the Automotive Systems Technology program.*

*End Term - Summer 2008 [2008\*02] - CRC 09/20/06*

*Effective Term – Summer 1997 [1997\*02]*

AUT 271	Adv Heating & A/C	2	2	3
Prerequisites:	None			
Corequisites:	None			

This course utilizes service information and test equipment to diagnose automatic temperature control and ventilation systems. Topics include advanced testing of sensors, actuators, and control modules using service information, on-board diagnostics, and/or appropriate test equipment. Upon completion, students should be able to perform advanced diagnosis and repair on automatic temperature control and ventilation systems.

*End Term - Summer 2008 [2008\*02] - CRC 09/20/06*

*Effective Term – Spring 2003 [2003\*01] – CRC 4/17/02*

AUT 276	ASE Certifications & Apps	3	9	6
Prerequisites:	None			
Corequisites:	None			

This course includes a comprehensive overview of all vehicle systems with emphasis on diagnostics, service and repair. Topics include all areas of Automotive Service Excellence (ASE) Certifications through the advance levels. Upon completion, students should be able to assume duties in the automotive industry and be qualified to take ASE certification tests.

*End Term - Summer 2008 [2008\*02] - CRC 09/20/06*

*Effective Term – Summer 1997 [1997\*02]*

AUT 280	Engine Airflow	2	3	3
Prerequisites:	None			
Corequisites:	None			

This course provides in-depth coverage of the effects of power output based on airflow into and out of an internal combustion engine. Emphasis is placed on changes to the induction and exhaust systems documented through flow bench testing to increase engine airflow. Upon completion, students should be able to make changes to carburetors, intake manifolds, cylinder heads, and exhaust manifolds to improve engine airflow and power.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

<b>AUT 281</b>	<b>Adv Engine Performance</b>	2	2	3
Prerequisites:	None			
Corequisites:	None			

This course utilizes service information and specialized test equipment to diagnose and repair power train control systems. Topics include computerized ignition, fuel and emission systems, related diagnostic tools and equipment, data communication networks, and service information. Upon completion, students should be able to perform diagnosis and repair.

*Effective Term – Summer 1997 [1997\*02]*

AUT 281	Adv Engine Performance	2	2	3
Prerequisites:	None			
Corequisites:	None			

This course utilizes service information and specialized test equipment to diagnose/repair power train control systems. Topics include computerized ignition, fuel and emission systems, related diagnostic tools and equipment, data communication networks, and service information. Upon completion, students should be able to perform advanced engine performance diagnosis and repair.

*End Term - Summer 2008 [2008\*02] - CRC 09/20/06*

*Effective Term – Summer 1997 [1997\*02]*

AUT 282	Engine Elec Management	3	9	6
Prerequisites:	None			
Corequisites:	None			

This course includes principles, systems, and procedures required for diagnosing and restoring engine performance/driveability and emission control through mechanical, electrical, and gas analysis. Emphasis is placed on diagnostics using mechanical, electrical (including on-board), and gas analysis to determine root causes for repair purposes. Upon completion, students should be able to diagnose and repair PCM-related engine performance/driveability and emission problems.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

<b>AUT 283</b>	<b>Adv Auto Electronics</b>	2	2	3
Prerequisites:	AUT 161			
Corequisites:	None			

This course covers advanced electronic systems on automobiles. Topics include microcontrollers, on-board communications, telematics, hybrid systems, navigation, collision avoidance, and electronic accessories. Upon completion, students should be able to diagnose electronic systems using appropriate service information, procedures, and equipment and remove/replace/reprogram controllers, sensors, and actuators.

*Effective Term – Fall 1999 [1999\*03]*

AUT 283	Advanced Electronic Diagnosis	1	2	2
Prerequisites:	None			
Corequisites:	None			

This course covers the skills needed to properly diagnose complex electrical/electronic problems in automotive systems in detail. Topics include the use of equipment such as oscilloscopes, scan tools, and digital meters as an effective aid in the proper diagnosis and troubleshooting of problems in complex driveability and electrical systems. Upon completion, students should be able to effectively and systematically diagnose, test, and repair complex electrical problems using appropriate service information and diagnostic equipment.

*Effective Term – Spring 2003 [2003\*01] – CRC 4/17/02*

<b>AUT 284</b>	<b>Emerging Auto Tech</b>	2	6	4
Prerequisites:	None			
Corequisites:	None			

This course covers emerging technologies in the automotive industry and the diagnostics associated with those technologies. Topics include exploring new technologies, diagnostic tools and methods, and repairs. Upon completion, students should be able to understand emerging automotive technologies.

*Effective Term – Fall 2007 [2007\*03] – CRC 09/20/06*

<b>AUT 285</b>	<b>Intro to Alternative Fuels</b>	2	2	3
Prerequisites:	None			
Corequisites:	None			

This course is an overview of alternative fuels and alternative fueled vehicles. Topics include composition and use of alternative fuels, including compressed natural gas, propane, biodiesel, ethanol, electric, hydrogen, synthetic fuels, and vehicles that use alternative fuels. Upon completion, students should be able to identify alternative fuel vehicles, explain how each alternative fuel delivery system works, and make minor repairs.

*See the SEL and SEM prefixes for generic Selected Topics and Seminar course descriptions.*