Automotive

(A Division of the Mechanical Engineering Department)

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The Automotive Program prepares students for a wide range of exciting careers in a fast-growing, rapidly-changing industry. The demand for skilled, educated, and honest professionals continues to intensify as the complexity of the modern automobile increases. As a result, our graduates are highly sought after and well-compensated. Because every household and business in the world is affected by the transportation industry, career opportunities are plentiful.

The Automotive Department offers the following degrees:

B.S. in Advanced Vehicle Systems (416)

This degree allows students to study all of the systems that comprise a modern automobile in depth. When coupled with a minor or with clusters from areas such as engineering, manufacturing technology, electrical engineering, business, or others, graduates of this degree are prepared for diverse careers in the automotive industry including: service engineer, research and development technician, engineering technician, electrical engineering technician, manager, educator, writer, or service technician.

B.S. in Automotive Engineering Technology (414)

This degree combines automotive and engineering coursework to prepare students for careers including test engineer, service engineer, or engineering technician. In these positions, interns and graduates build and test prototypes and aid in the development and refinement of new vehicles and their components. These individuals often work in labs and on test courses in order to help take new automobiles from design to the manufacturing stage.

B.S. in Automotive Technology Management (413)

This degree combines automotive and business management course work to prepare students for career opportunities in managing the operations of automotive-related businesses including manufacturers, aftermarket producers, dealerships, and other technology-oriented companies. It is also a great preparation for becoming a business owner or entrepreneur.

A.A.S. in Automotive Technology (346)

This degree prepares students for a challenging and rewarding career as an automotive technician in a dealership or independent repair business.

Automotive courses: Classes are "hands-on" and interactive. Much of the required course time is spent in labs, working on vehicles and real problems. BYU-Idaho's automotive facility is well-equipped with state-of-the-art diagnostic and test equipment where students can experience the latest technology and leave prepared to begin a successful career.

Internships: Internships are paid work experiences and are required for automotive majors. They allow students to gain industry experience as part of their training and provide them the opportunity to apply and reinforce the knowledge and skills learned in the classroom. Internships also serve to open doors for future careers.

Elective Courses: The Automotive program also offers elective courses that are open to all university students, regardless of their major, previous experience, or knowledge. These classes are designed to teach car owners how to purchase, care for, and perform basic maintenance on their vehicles.

Special Requirements: Students in all automotive labs are expected to have at least a basic set of tools. A list of the required tools can be found at http://www.byui.edu/automotive-technology/student-resourcestool-list/ and these tools can be purchased through the school during the first week of the semester for a discounted price.

AAS in Automotive Technology (346)

Core Courses
Take these courses:

AUTO 125	1
AUTO 131	2
AUTO 131L	1
AUTO 132	2
AUTO 132L	1
AUTO 155	2
AUTO 155L	2
AUTO 201	4

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AUTO 221	3
AUTO 231	3
AUTO 232	3
AUTO 298R	1
AUTO 340	3
AUTO 350	6
AUTO 365	6
AUTO 381	3
AUTO 382	3
	46

Program Notes:

- *No Double Counting of Major Courses*
- *No Grade Less Than C-*

Credit Requirements:

Foundations	17
Major	46
Total	63

Tracks Available:

Fall-Winter	Yes
Winter-Spring	Yes
Spring-Fall	Yes

BS in Automotive Technology Management (413)

Core Courses
Take theses courses:

ACCTG 180	3
AUTO 125	1
AUTO 131	2
AUTO 131L	1
AUTO 132	2
AUTO 132L	1
AUTO 155	2
AUTO 155L	2
AUTO 231	3
AUTO 232	3
AUTO 300	3
AUTO 340	3
AUTO 381	3

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AUTO 382	3
B 100	1
B 211	3
B 215	3
B 302	3
B 322	3
B 342	3
B 361	3
MATH 221A	3
	54

Take 1 course:

B 380	3
B 483	3
B 499A	3
	3

Take 1 course:

AUTO 398R	1
IDS 398R	1-3
	1

Take 1 course:

AUTO 350	6
ME 340	3
IDS 499	2
	2

Program Notes:

- *No Double Counting of Major Courses*
- *No Grade Less Than C-*

Credit Requirements:

Foundations	40
Major	60
Elective	20
Total	120

Tracks Available:

Fall-Winter	Yes
Winter-Spring	Yes
Spring-Fall	Yes

BS in Automotive Engineering Technology (414)

Core Courses
Take these courses:

AUTO 125	1
AUTO 131	2
AUTO 131L	1
AUTO 132	2
AUTO 132L	1
AUTO 155	2
AUTO 155L	2
AUTO 231	3
AUTO 232	3
AUTO 300	3
AUTO 340	3

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AUTO 381	3
AUTO 382	3
MATH 330	3
ME 101	1
ME 142	3
ME 172	3
ME 201	3
ME 202	3
ME 231	2
ME 231L	1
ME 331	3
ME 332	3
	54

Complete 1 option:
Option A

FDMAT 112	4

Option B

MATH 109 and	5
FDMAT 112	4

Option C

FDMAT 110 and	3
MATH 111 and	2
FDMAT 112	4
	4

Interdisciplinary Courses
Take 1 course:

AUTO 398R	1
IDS 398R	1-3
ME 398R	1
	1

Take 1 course:

AUTO 350	6
IDS 499	2
ME 340	3
	2

Program Notes:

- *No Double Counting of Major Courses*
- *No Grade Less Than C-*

Credit Requirements:

Foundations	40
Major	61
Elective	19
Total	120

Tracks Available:

Fall-Winter	Yes
Winter-Spring	Yes
Spring-Fall	Yes

BS in Advanced Vehicle Systems (416)

Core Courses
Take these courses during your first 2 semesters:

AUTO 125	1
AUTO 131	2
AUTO 131L	1
AUTO 132	2
AUTO 132L	1
AUTO 155	2
AUTO 155L	2
	11

Take these courses:

AUTO 201	4
AUTO 221	3
AUTO 231	3
AUTO 232	3
AUTO 298R	1
AUTO 300	3
AUTO 340	3
AUTO 350	6
AUTO 365	6
AUTO 381	3
AUTO 382	3
AUTO 398R	1
	39

Supplemental Courses
Take 3 credits:

B 215	3
CIT 110	3
ME 142	3
ME 172	3
ME 231	3
ME 231L	1
ME 331	3
ME 332	3
WELD 170	3
WELD 224	3
WELD 243	3
	3

Program Notes:

- *No Double Counting of Major Courses*
- *No Grade Less Than C-*
- *Though it is not required, it is strongly recommended that you choose an area to emphasize in. This can be done by earning a minor or cluster(s) that compliment your skillset. Some suggested minors or clusters include: manufacturing technology, business management, engineering, electrical engineering, or welding and fabrication. However, you are not limited to these options.*

Credit Requirements:

Foundations	40
Major	53
Elective	27
Total	120

Tracks Available:

Fall-Winter	Yes
Winter-Spring	Yes
Spring-Fall	Yes

Minor in Automotive Technology (210)

Core Courses
Take 1 course

AUTO 100	1
AUTO 125	1
	1

Take these courses:

AUTO 131	2
AUTO 131L	1

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AUTO 132	2
AUTO 132L	1
AUTO 155	2
AUTO 155L	2
AUTO 231	3
AUTO 232	3
	16

Supplemental Courses
Take 1 course:

AUTO 221	3
AUTO 340	3
AUTO 381	3
AUTO 382	3
	3

Program Notes:

- *No Double Counting of Minor Courses*
- *No Grade Less Than C-*

Credit Requirements:

Total	20

Tracks Available:

Fall-Winter	Yes
Winter-Spring	Yes
Spring-Fall	Yes

Automotive Technology Concentration (D 145)

Core Course
Take these courses:

AUTO 125	1
AUTO 131	2
AUTO 131L	1
AUTO 132	2
AUTO 132L	1
AUTO 155	2
AUTO 155L	2
AUTO 231	3
AUTO 232	3
AUTO 300	3
AUTO 340	3
AUTO 381	3
AUTO 382	3
	29

Take 1 course:

AUTO 350	6
IDS 499	2
ME 340	3
	2

Interdisciplinary Courses
Take 1 course:

AUTO 398R	1
IDS 398R	1-3
	1

Program Notes:

- *No Double Counting of Concentration Courses*
- *No Grade Less Than C-*

Credit Requirements:

Total	32

Tracks Available:

Fall-Winter	Yes
Winter-Spring	Yes
Spring-Fall	Yes

Automotive Service Technology Certificate (C 112)

Core Courses	
Take these courses	
AUTO 125	1
AUTO 131	2
AUTO 132	2
AUTO 155	2
AUTO 201	2
AUTO 231	2
AUTO 232	2
	13

Program Notes:

•Grade of C- or higher required in all Certificate Courses

Credit Requirements:

Total 13

Automotive Predefined Clusters

Automotive Technology		6100
Take 1 course:		
AUTO 100	Automobile Ownership and Maintenance	1
AUTO 125	Introduction to Automotive Technology	1
Take these courses:		
AUTO 131	Electrical Systems	2
AUTO 131L	Electrical Systems Lab	1
AUTO 132	Engine Performance	2
AUTO 132L	Engine Performance Lab	1
Take 4 credits:		
AUTO 155	Chassis Systems	2
AUTO 155L	Chassis Systems Lab	2
AUTO 221	Climate Control	3
AUTO 231	Vehicle Electronics	3
AUTO 232	Engine Management Systems	3
Take 1 course:		
ME 101	Intro to Engineering & Technology	1
WELD 100	Introduction to Welding	1
	Total Credits	**12**

Course Descriptions — Credits*

AUTO 100 Automotive Ownership and Maintenance (1:1:0:0)

This class is a basic consumer-awareness and career exploration course. It is designed to teach students how their automobiles work and how to become more effective car owners. Students will learn how they can minimize expenses and problems as they learn to buy, sell, maintain, and purchase repairs for their vehicles. They will also be introduced to career opportunities in the automotive field. Some of the course time will be spent in the classroom, while some will be spent working in the lab with small groups.
(Fall, Winter, Spring)

AUTO 125 Introduction to Automotive Technology (1:1:0:0)

This is an online course that is required for all automotive majors, but open to students of other majors. It is designed to introduce students to some of the foundational principles and knowledge required to be successful in other automotive courses.
(Fall, Winter, Spring)

AUTO 131 Electrical Systems (2:2:0:0)

Total Course Fees: $20.00
Concurrent requisite: AUTO 131L

This course is an introduction to basic electrical principles and systems. Students will learn how to use test equipment to diagnose, and repair electrical circuit faults. They will also study batteries, starting systems, and charging systems.
(Fall, Winter, Spring)

AUTO 131L Electrical Systems Lab (1:0:4:0)

Concurrent requisite: AUTO 131

This lab course accompanies AUTO 131 and will provide students an opportunity to apply their knowledge of electrical principles by testing, diagnosing, and repairing circuits.
(Fall, Winter, Spring)

AUTO 132 Engine Performance (2:2:0:0)

Prerequisite: AUTO 131
Concurrent requisite: AUTO 132L

This course will introduce students to internal combustion engines and the systems that support them. Students will learn to perform engine condition tests and how to evaluate, diagnose, and repair issues with the fuel, ignition, cooling, and lubrications systems.
(Fall, Winter, Spring)

AUTO 132L Engine Performance Lab (1:0:4:0)

Concurrent requisite: AUTO 132

This lab course accompanies AUTO 132 and will provide students an opportunity to apply their knowledge of internal combustion engines and the system that support them. Students will perform engine condition tests and testing, diagnosis, and repair of issues with the fuel, ignition, cooling, and lubrications systems.
(Fall, Winter, Spring)

AUTO 155 Chassis Systems (2:2:0:0)

Total Course Fees: $30.00
Concurrent requisite: AUTO 155L

In this course, students will learn the theory of operation, diagnosis, service and repair procedures of automotive chassis (steering, suspension, and braking) systems.
(Fall, Winter, Spring)

AUTO 155L Chassis Systems Lab (2:0:6:0)

Concurrent requisite: AUTO 155

This lab course accompanies AUTO 155 and will provide students the opportunity to apply their knowledge of chassis (steering, suspension, and braking) systems.
(Fall, Winter, Spring)

* Credit Description (Credit Hours : Lecture Hours per week : Lab Hours per week : Guided Instruction Hours per week)

AUTO 201 Drive Trains (4:2:6:0)
Prerequisites: AUTO 132 or AUTO 155
Course Requirements: Automotive Majors Only
This is a course that focuses on theory of operation, diagnosis, repair, and maintenance of automotive drive train systems. Students will learn about and gain experience with manual transmissions/transaxles, clutch assemblies, differential axles, drive shafts/u-joints, and four wheel drive and all-wheel drive systems.
(Fall, Spring)

AUTO 221 Climate Control (3:2:3:0)
Prerequisites: AUTO 131 and AUTO 132
Course Requirements: Automotive Majors Only
This course will introduce students to the electrical, pressure, and temperature principles that govern heating and air conditioning systems. They will learn to use professional service equipment to test, diagnose, and repair heating and air conditioning faults.
(Fall, Spring)

AUTO 231 Vehicle Electronics (3:2:4:0)
Prerequisite: AUTO 131
In this course, students will learn how computer controls affect the operation of the electrical systems in modern automobiles. They will learn how various sensors, actuators, and electronic control units work. They will learn about network communications between the components. Students will be able to test, diagnose, and repair the various electrical systems ranging from power windows and heated seats to instrument clusters and driver information systems.
(Fall, Winter, Spring)

AUTO 232 Engine Management Systems (3:2:4:0)
Prerequisites: AUTO 131 and AUTO 132
In this course, students will become familiar with how sensors, actuators, and electronic control units work together to optimize engine performance. They will learn how to use scan tools to become more proficient at testing and diagnosing faults. Students will also reinforce engine condition testing and understanding of fuel, ignition, cooling, and lubrication systems.
(Fall, Winter, Spring)

AUTO 290R Special Projects (1-3:1:0:0
Formerly: AUTO 290
Repeatable Course: May earn a maximum of 6 credits or maximum of 4 enrollments
Course Requirements: Instructor Approval Required)
In this course, students will have the opportunity to work on a special project related to their automotive coursework. Projects and their desired outcomes are designed by the instructor and student.
(Fall, Winter, Spring)

AUTO 291 Certification (0.5:1:0:0)
Repeatable Course: May earn maximum of 2 credits
This course covers the basic information and procedures necessary to prepare to take the national ASE certification tests. Students will discuss test methodology, as well as take practice certification tests.
(Fall, Winter)

AUTO 298R Automotive Internship (1:2:0:0)
Formerly: AUTO 298
Internship Fees: $81.50 (LDS) $163 (non-LDS) per credit
Exempt from tuition, but charged this independent course fee
Repeatable Course: May earn maximum of 2 credits or maximum of 2 enrollments
This course involves at least twelve consecutive weeks of supervised automotive related work experience. Conditions of this internship are arranged on an individual basis by the students and the faculty coordinator for this relationship.
(Fall, Winter, Spring)

AUTO 300 Career Planning and Networking (3:2:2:0)
In this course, students will explore automotive career options and learn how to choose and prepare for a career. They will network with other professionals and will learn skills that will make them more successful in finding and obtaining their desired internships and careers.
(Fall, Spring)

AUTO 340 Emerging Powertrain Technologies (3:2:3:0)
Prerequisites: AUTO 155 and AUTO 232
Course Requirements: Automotive Majors Only
This course teaches students about diesel and hybrid-electric powertrains. Students will learn how to test, diagnose, maintain, and repair vehicles with these propulsion systems. They will also become familiar with other alternative power sources, such as ethanol, methanol, compressed natural gas, and hydrogen fuel cells. Students will explore the trends of these technologies and their impact on the automotive industry and the environment.
(Fall, Spring)

AUTO 350 Internal Combustion Engines (6:3:9:0)
Prerequisites: AUTO 201 and AUTO 231 and AUTO 232
This course teaches the theory, operation, diagnosis and repair of internal combustion engines. Students will learn precision measurement techniques, machining processes, and about fastener and gasket technologies. They will also study surface finishes, lubrication, and cooling.
(Winter)

AUTO 365 Automatic Transmissions (6:3:9:0)
Prerequisites: AUTO 201 and AUTO 231 and AUTO 232
This course teaches the theory of operation, testing, diagnosis, and repair of automatic transmissions used in passenger cars and light trucks. Students will study the hydraulic, electrical, and mechanical principles that govern the operation of a modern automatic transmission.
(Winter)

AUTO 381 Drivability and Diagnostics (3:2:4:0)
Prerequisites: AUTO 231 and AUTO 232
This course will build on students' experience in other classes and help them to understand vehicle emissions systems and emissions testing. They will also learn to use the vehicle's on-broad diagnostic system monitors to test and verify successful repairs. Students will study fuel and ignition systems in greater depth. They will apply their diagnostic skills as they test and repair engine performance faults.
(Fall, Spring)

AUTO 382 Data Acquisition and Analysis (3:2:4:0)
Prerequisites: AUTO 231 and AUTO 232
This course teaches engine management systems with an emphasis in computer controls, multiplexing, late model power train innovations, and on board diagnostics. Students will become proficient in their use of lab scopes, scan tools, and other diagnostic equipment that is designed to test the most complex and advanced engine performance systems. They will learn diagnostic strategies that rely on the vehicle's data stream. They will learn the basic principles of data acquisition and analysis. Students will also choose and complete a major research project in conjunction with this class.
(Fall, Spring)

AUTO 398R Automotive Professional Internship (1:0:0:0)
Formerly: AUTO 398
Repeatable Course: May earn a maximum of 4 credits
Internship Fees: $81.50 (LDS) $163 (non-LDS) per credit
Exempt from tuition, but charged this independent course fee
This course is a customized internship designed to help automotive students obtain experience in the sector of the automotive industry in which they wish to obtain eventual full time employment. The internship should last at least 12 weeks. Other conditions of the internship are arranged on an individual basis by the student and the faculty coordinator for the internship.
(Fall, Winter, Spring)

* Credit Description (Credit Hours : Lecture Hours per week : Lab Hours per week : Guided Instruction Hours per week)