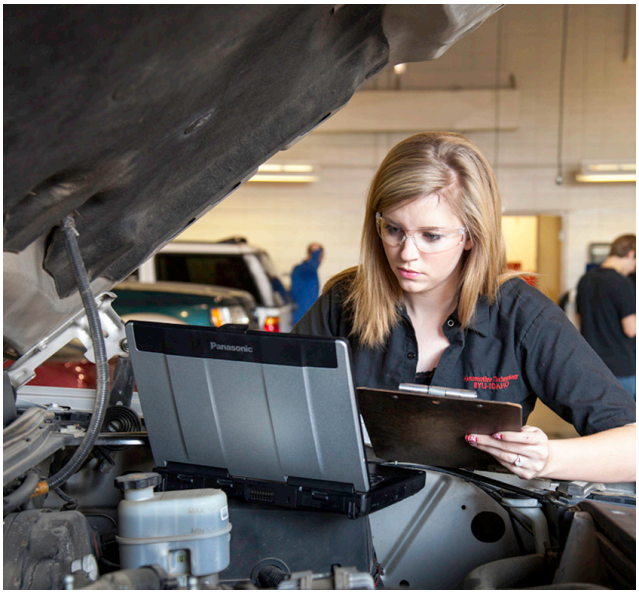
Automotive

(A Division of the Mechanical Engineering Department)



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The Automotive Department 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, minors, and clusters:

B.S. in Advanced Vehicle Systems (416)

This degree allows students to study all the systems that comprise a modern automobile. This degree can be coupled with a minor or clusters from areas such as engineering, manufacturing technology, electrical engineering, or others. Graduates of this degree are prepared for diverse careers in the automotive industry such as developing and testing new vehicles, engines, transmissions, and electronic components. Others, depending on their minors and interests, may choose to write or edit for automotive publications, to instruct in or administer automotive technology programs in high schools, colleges, and vocational schools, or to work in a myriad of other automotive-related professions.

B.S. in Automotive Engineering Technology (414)

This degree combines automotive and engineering coursework to prepare students for careers as service engineers, test engineers, or engineering technicians. In these positions, interns and graduates build and test prototypes and aid in product development of new vehicles and their components. Demand for graduates in this field is very strong and is continuing to increase.

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.

Minor in Automotive Technology

Cluster in Automotive Technology

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

Internships: Internships are required for automotive majors which allow students to gain industry experience as part of their training. Here, students will have the opportunity to apply and to 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 courses (except Auto 100 and Auto 125) 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.

GPA requirements: In order to qualify for graduation with an automotive degree, students must earn at least a 'C-' grade in each core curriculum class.

AAS in Automotive Technology (346)

Core Courses
Take these courses:

AUTO 125	1
AUTO 131	3
AUTO 132	3
AUTO 155	4
AUTO 201	4
AUTO 221	3
AUTO 231	3

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

Supplemental Courses
Take 1 course:

ME 231 and 231L	3
WELD 101	3
	3

Optional Course:

AUTO 291	0.5
	0.5

Program Notes:

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

Credit Requirements:

Foundations	17
Major	49
Total	66

Tracks Available:

Fall-Winter	Yes
Winter-Spring	Yes
Spring-Fall	No

BS in Automotive Technology Management (413)

Core Courses
Take theses courses:

AUTO 125	1
AUTO 131	3
AUTO 132	3
AUTO 155	4
AUTO 231	3
AUTO 232	3
AUTO 300	3
AUTO 340	3
AUTO 381	3
AUTO 382	3

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B 100	1
B 211	3
B 212	4
B 302	3
B 322	3
B 342	3
B 361	3
B 499A	3
	52

Take 1 course:

B 380	3
B 483	3
	3

Take 1 course:

AUTO 398	1
IDS 398R	1-3
	1

Take 1 course:

ME 340	3
IDS 499	2
AUTO 350	6
	2

Program Notes:

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

Credit Requirements:

Foundations	40
Major	58
Elective	22
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	3
AUTO 132	3
AUTO 155	4
AUTO 231	3
AUTO 232	3
AUTO 300	3
AUTO 340	3
AUTO 381	3
AUTO 382	3
FDMAT 112	4

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MATH 330	3
ME 172	3
ME 201	2
ME 202	3
ME 231	3
ME 331	3
ME 332	3
	53

Take 4 credits:

ME 101	1
ME 142	3
B 212	4
	4

Interdisciplinary Courses
Take 1 course:

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

Take 1 course:

ME 340	3
IDS 499	2
AUTO 350	6
	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 Advanced Vehicle Systems (416)

Core Courses
Take these courses during your first 2 semesters:

AUTO 125	1
AUTO 131	3
AUTO 132	3
AUTO 155	4
	11

Take these courses:

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

Supplemental Courses
Take 3 credits:

B 212	4
CIT 110	3
ME 142	3
ME 172	3
ME 231	3
ME 331	3
ME 332	3
WELD 101	3
WELD 120	3
WELD 123	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	No

Minor in Automotive Technology (210)

Core Courses
Take 1 course

AUTO 100	1
AUTO 125	1
	1

Take these courses:

AUTO 131	3
AUTO 132	3
AUTO 155	4
AUTO 231	3
AUTO 232	3
	16

Supplemental Courses
Take 1 course:

AUTO 221	3
AUTO 340	3
AUTO 350*	6
AUTO 365*	6
AUTO 381	3
AUTO 382	3
	3

Program Notes:

- *No Double Counting of Minor Courses*
- *No Grade Less Than C-*
- **By instructor authorization only.*

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	3
AUTO 132	3
AUTO 155	4
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 398	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 Pre-approved Clusters

Automotive Technology		6100
Take 1 course:		
AUTO 100	Automotive Maintenance I	1
AUTO 125	Automotive Major Essentials	1
Take these courses:		
AUTO 131	Automotive Electrical Systems I	3
AUTO 132	Automotive Engine Performance I	3
Take 4 credits:		
AUTO 155	Steering, Suspension and Brakes	4
AUTO 221	Heating & Air Conditioning	3
AUTO 231	Automotive Electrical Systems II	3
AUTO 232	Automotive Engine Performance II	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 Auto Maintenance I (1:1:0:0)
This is a basic consumer-awareness and career exploration course. It is designed to teach students about how their automobiles work and how to maintain them. Students 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 spend working in the lab with small groups.
(Fall, Winter, Spring)

AUTO 125 Automotive Major Essentials (1:1:0:0)
This is an online course 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 Automotive Electrical Systems I (3:2:4:0)
Total Course Fees: $20.00
This course is an introduction to basic electrical principles and an exploration of various automotive electrical systems. Students will learn to use multimeters, test lights, and electrical diagrams to test, diagnose, and repair electrical circuit faults. They will also study batteries, starting systems, and charging systems.
(Fall, Winter, Spring)

AUTO 132 Automotive Engine Performance I (3:2:4:0)
Prerequisite: AUTO 131
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 test, diagnose, and repair issues with the fuel, ignition, cooling, and lubrications systems.
(Fall, Winter, Spring)

AUTO 155 Steering, Suspension & Brakes (4:2:7:0)
Total Course Fees: $30.00
This course teaches diagnosis, service, and repair procedures of the steering, suspension, and brake systems that are found on today's cars and light trucks. Students will also learn to perform wheel alignments using computerized alignment equipment.
(Fall, Winter, Spring)

AUTO 201 Manual Drive Trains (4:2:6:0)
Prerequisites: AUTO 132 or AUTO 155
Course Requirements: Automotive Majors Only
This is a course that focuses on theories of operation, diagnosis, and maintenance pertaining to the drive train system. The lab experience will include the diagnosis, repair, and /or overhaul of manual transmission/transaxle, clutch assemblies, differential axles, drive shafts/u-joints, four wheel drive, and all wheel drive systems.
(Fall, Spring)

AUTO 221 Heat & Air Conditioning (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 Automotive Electrical Systems II (3:2:4:0)
Prerequisite: AUTO 131
In this course, students will learn how computer controls affect an 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 Automotive Engine Performance II (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 290 Independent Study (1-3:0:0:0
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 298 Automotive Internship (1:0:0:0)
Internship Fees: $78.00 (LDS) $156.00 (non-LDS) per credit
Exempt from tuition, but charged this independent course fee
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 Automotive Business Management (3:2:2:0)
Total Course Fees: $20.00
This course is a study of how automotive businesses operate profitably, and of career planning and networking. Students will explore automotive career options and learn how to choose and prepare for a career. They will learn skills that will make them more successful in finding and obtaining their desired internships and careers.
(Fall, Spring)

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

AUTO 340 Automotive Alternate Fuel Systems (3:2:3:0)

Prerequisites: AUTO 155 and AUTO 201 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 Major Engine Repair (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 Automotive Transmissions/Transaxles (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 Automotive Engine Performance 3 (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 Automotive Engine Performance 4 (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 398 Automotive Professional Internship (1:0:0:0)

Internship Fees: $78 (LDS) $156 (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.

(Fall, Winter, Spring)

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