

Clackamas Community College
Online Course/Outline Submission System

AM-100 Automotive Fundamentals

General education certified: Yes **No**

- Writing
- Oral Communication
- Arts and Letters
- Science & Computer Science
- Mathematics
- Social Science
- Cultural Literacy
- Health & Physical Education

Approved Date (mm/dd/yyyy): / /

Section #1 General Course Information

Department: Automotive

Submitter

First Name: David

Last Name: Bradley

Phone: 503-594-3046

Email: bradleyd

Course Prefix and Number: AM - 100

Credits: 3

Contact hours

Lecture (# of hours):

Lec/lab (# of hours): 120

Lab (# of hours):

Total course hours: 120

For each credit, the student will be expected to spend, on average, 3 hours per week in combination of in-class and out-of-class activity.

Course Title: Automotive Fundamentals

Course Description:

An introductory automotive service class intended to provide fundamental knowledge and basic experience about automobiles. Covers automotive systems, preventive maintenance and performing basic repairs. Also provides skill and knowledge for purchasing cars, choosing quality mechanics, and making good economic decisions about repairs and costs. Intended generally to enhance the overall satisfaction of being an automatic consumer and car owner.

Type of Course: Career Technical Preparatory

Reason for the new course:

The complexity of modern automobiles is such that the simple content of previous classes is inadequate. The curriculum has slowly morphed into a rigorous College level class, deserving the credits requested. This change provides the basis for inclusion in pathway Certs and Degrees in the future.

Is this class challengeable?

No

Can this course be repeated for credit in a degree?

No

Is general education certification being sought at this time?

No

Does this course map to any general education outcome(s)?

No

Is this course part of an AAS or related certificate of completion?

No

Are there prerequisites to this course?

No

Are there corequisites to this course?

No

Are there any requirements or recommendations for students taken this course?

No

Are there similar courses existing in other programs or disciplines at CCC?

No

Will this class use library resources?

Yes

Have you talked with a librarian regarding that impact?

No

Is there any other potential impact on another department?

No

Does this course belong on the Related Instruction list?

No

GRADING METHOD:

A-F or Pass/No Pass

Audit: Yes

When do you plan to offer this course?

Fall

Winter

Spring

Is this course equivalent to another?

If yes, they must have the same description and outcomes.

No

Will this course appear in the college catalog?

Yes

Will this course appear in the schedule?

No

Student Learning Outcomes:

Upon successful completion of this course, students should be able to:

1. maintain, diagnose and repair basic automotive systems,
2. identify major components of an automobile,
3. implement a plan to negotiate a fair price on a new and used vehicle,
4. research and locate a qualified repair facility,
5. use and describe tools used in the automobile industry,
6. describe alternative fuel systems.

This course does not include assessable General Education outcomes.

Major Topic Outline:

1. Introduction to Automotive Technology.
 - a. The automobile.
 - b. Automotive careers and A.S.E. Certification.

- c. Basic hand tools.
- d. Power tools and equipment.
 - d1. Air.
 - d2. Electric.
 - d3. Hydraulic.
- e. The auto shop and safety.
- f. Automotive measurement and math.
 - f1. Measuring systems.
 - f2. Measuring tools.
- g. Using service information.
 - g1. Repair manuals.
 - g2. Computerized service data.
- h. Basic electricity and electronics.
- i. Fasteners, gaskets, seals and sealants.
- j. Vehicle maintenance, fluid service, recycling.
- 2. Engines.
 - a. Engine fundamentals.
 - b. Engine design classifications.
 - c. Top end construction.
 - d. Bottom end construction.
 - e. Front end construction.
 - f. Engine size and performance measurements.
- 3. Fuel Systems.
 - a. Automotive fuels, gasoline and diesel combustion.
 - b. Fuel tanks, pumps, lines and filters.
 - c. Gasoline injection fundamentals.
 - d. Gasoline injection diagnosis and repair.
 - e. Carburetor fundamentals.
 - f. Carburetor diagnosis, service and repair.
 - g. Diesel injection fundamentals.
 - h. Diesel injection diagnosis, service and repair.
 - i. Exhaust systems, turbochargers and superchargers.
- 4. Electrical Systems.
 - a. Automotive batteries.
 - a1. Principles.
 - a2. Functions.
 - a3. Construction.
 - b. Battery testing and service.
 - c. Starting system fundamentals.
 - c1. Principles.
 - c2. Construction.
 - d. Starting system testing and repair.
 - e. Charging system fundamentals.
 - e1. Parts.
 - e2. Function.
 - f. Charging system diagnosis, testing and repair.
 - f1. Diagnosis.
 - f2. Precautions.
 - f3. Tests.
 - g. Ignition system fundamentals.
 - h. Ignition system problems, testing and repair.
 - i. Lights, instrumentation, wipers and horns.
 - j. Sound systems and power accessories.
- 5. Cooling and lubrication systems.
 - a. Cooling system fundamentals.
 - a1. Function.
 - a2. Operation.
 - a3. Types.
 - b. Cooling system testing, maintenance and repair.
 - c. Lubrication system fundamentals.
 - c1. Function.
 - c2. Operation.
 - d. Lubrication system testing, service and repair.
- 6. Emission control systems.
 - a. Emission control systems.
 - b. Emission control system testing, service and repair.
- 7. Engine performance and Computer Systems.
 - a. Engine performance and driveability.
 - b. Advanced diagnostics.
 - c. Engine tune up.
- 8. Engine service and repair.
 - a. Engine mechanical problems.
 - b. Engine removal, disassembly and parts cleaning.
 - c. Bottom end service.
 - d. Top end service.
 - e. Engine front end service and installation.
- 9. Drive trains and axles.
 - a. Clutch fundamentals.
 - b. Clutch diagnosis and repair.
 - c. Manual transmission fundamentals.
 - d. Manual transmission diagnosis and repair.
 - e. Automatic transmission fundamentals.
 - f. Automatic transmission service.
 - g. Drive shafts and transfer cases.
 - h. Drive shaft and transfer case diagnosis, service and repair.
 - i. Differential and rear drive axle fundamentals.
 - j. Differential and rear drive axle diagnosis and repair.
 - k. Transaxle and front drive axle fundamentals.

- I. Transaxle and front drive axle diagnosis and repair.
- 10. Suspension, steering and brake systems.
 - a. Tire, wheel and wheel bearing fundamentals.
 - b. Tire, wheel and wheel bearing service.
 - c. Suspension system fundamentals.
 - d. Suspension system diagnosis and repair.
 - e. Steering system fundamentals.
 - f. Steering system diagnosis and repair.
 - g. Brake system fundamentals.
 - h. Brake system diagnosis and repair.
 - i. Anti lock brakes, traction control and stability control.
 - j. Wheel alignment.
- 11. Heating and air conditioning systems.
 - a. Fundamentals.
 - a1. Principles of refrigeration.
 - a2. Refrigeration cycle.
 - b. Heating and air conditioning service.
- 12. Safety, security and navigation systems.
 - a. Restraint systems.
 - b. Restraint system service.
 - c. Security, navigation and future systems.

Does the content of this class relate to job skills in any of the following areas:

- | | |
|--------------------------------------|-----------|
| 1. Increased energy efficiency | No |
| 2. Produce renewable energy | No |
| 3. Prevent environmental degradation | No |
| 4. Clean up natural environment | No |
| 5. Supports green services | No |

Percent of course: 0%

First term to be offered:

Next available term after approval

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