Clackamas Community College

Online Course/Outline Submission System

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Section #1 General Course Information

Department: Automotive Technology: Auto Mechanics

Submitter

First Name: Rick
Last Name: Lockwood
Phone: 3053
Email: rickl

Course Prefix and Number: AM - 223

 # Credits: 3

Contact hours

Lecture (# of hours):
Lec/lab (# of hours): 72
Lab (# of hours):
Total course hours: 72

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: Hybrid Systems Technolgy

Course Description:

Provide students with knowledge of theory and physical description of hybrid vehicles. The student will have the opportunity to acquire practical experience in the area of diagnosing and repairing hybrid vehicles.

Type of Course: Career Technical Preparatory

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?

Yes

Name of degree(s) and/or certificate(s): Automotive Service Technology AAS

Are there prerequisites to this course?

Yes

Pre-reqs: AM-244

Have you consulted with the appropriate chair if the pre-req is in another program?
Yes (A 'Yes' certifies you have talked with the chair and have received approval.)*

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?

Yes

Student Learning Outcomes:

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

1. demonstrate how to service all hybrid systems,
2. explain how AC-DC and DC-DC converters work,
3. demonstrate how to test high voltage battery and related components,
4. demonstrate how to remove and replace high voltage battery packs.

This course does not include assessable General Education outcomes.

Major Topic Outline:

1. The history of hybrids.
a. How it began.
b. Series and parallel designs.
2. High voltage safety.
a. Gloves.
b. Equipment.
c. Warning lables.
3. Basic electric principles.
a. Ohm's law.
b. Amp's, Ohm's, voltage, and watts.
4. 3 phase motor operation.
a. Capacitors.
b. Transistors.
5. AC-DC Inverters.
a. Operation of an inverter.
b. How to test inverters.
6. DC-DC converters.
a. Operation of a converter.
b. How to test converter.
7. CVT transmission.
a. Servicing.
b. Theory of operation.

8. Resolvers.
a. Theory of operation.
b. Testing.
9. Interlock circuits.
a. Theory of operation.
b. Testing.
10. Electric steering.
a. Types of steering racks.
b. Theory of operation.
c. Calibrating steering racks.
11. Braking system.
a. Precautions.
b. Testing anti-lock brake systems.
c. Servicing hybrid brake systems.
12. A/C system.
a. Electric compressor.
b. Servicing hybrid A/C systems.
13. High voltage battery.
a. Battery types.
b. Servicing and testing hybrid battery's.
c. High voltage battery removal.

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

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

Percent of course: 20%

First term to be offered:

Next available term after approval
: