

AUTO 093B: LIGHT/MEDIUM DUTY DIESEL SYSTEMS

Originator

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Justification / Rationale

The Automotive Faculty are reviewing and/or updating this course to assure compliance with local, State, and Federal regulations; support consistency within the curriculum; practice relevance regarding automotive industry and community; and to make improvements that will strengthen the learning environment this course creates thus benefiting the learners.

Effective Term

Fall 2022

Credit Status

Credit - Degree Applicable

Subject

AUTO - Automotive Technology

Course Number

093B

Full Course Title

Light/Medium Duty Diesel Systems

Short Title

DIESEL SYSTEMS

Discipline**Disciplines List**

Automotive Technology

Modality

Face-to-Face
Hybrid

Catalog Description

This course provides theory and hands-on experience in the fundamentals of light and medium duty diesel systems including: engine construction, lubrication, cooling, fuel delivery, and emission systems. In addition, this course covers maintenance and light repair.

Schedule Description

This course provides theory and hands on experience in the fundamentals of light and medium duty diesel systems including: engine construction, lubrication, cooling, fuel delivery, and emission systems. Advisory: AUTO 010

Lecture Units

3

Lecture Semester Hours

54

Lab Units

1

Lab Semester Hours

54

In-class Hours

108

Out-of-class Hours

108

Total Course Units

4

Total Semester Hours

216

Prerequisite Course(s)

Advisory: AUTO 010

Required Text and Other Instructional Materials**Resource Type**

Book

Open Educational Resource

No

Author

Sean Bennett

Title

Modern Diesel Technology: Light Duty Diesels.

Edition

2nd

Publisher

Cengage Learning

Year

2012

College Level

Yes

Flesch-Kincaid Level

11.3

ISBN #

978-1337624978

For Text greater than five years old, list rationale:

Text used is the industry standard.

Class Size Maximum

21

Entrance Skills

ADVISORY SKILLS:

Demonstrate knowledge of shop safety.

Requisite Course ObjectivesAUTO 010-Describe shop safety practices and proper procedures regarding handling hazardous material.

Entrance Skills

Perform a detailed vehicle inspection and note required basic vehicle services required

Requisite Course Objectives

AUTO 010-Perform a detailed vehicle inspection.

Entrance Skills

Display teamwork.

Requisite Course Objectives

AUTO 010-Display team work.

Course Content

- Shop safety.
- Introduction to diesel engines.
- Diesel engine cylinder blocks.
- Cylinder head assemblies.
- Intake and exhaust systems.
- Cooling and lubricating circuits.
- Fuel subsystems.
- Injectors.
- Pump line nozzle (PLN) fuel injection systems.
- Electronically controlled injection systems.
- Engine electrical (cranking and charging).
- Engine electronics.
- Emissions controls.
- Servicing and maintenance.
- Diagnostics and testing.

Lab Content

- Shop safety.
 - Vehicle lifting.
 - Complete safety training.
- Engine identification.
- Component Identification.
- Intake and exhaust systems.
- Service and maintenance.
 - Cooling System, proper inspection, identification, and testing.
 - Lubricating System, proper inspection, identification, and testing.
 - Fuel systems, proper inspection, identification, and testing.
 - Engine electrical (cranking and charging), proper inspection, identification, and testing.

Course Objectives

	Objectives
Objective 1	Demonstrate proper completion of California regulated repair order complete with all information required by the state of California.
Objective 2	Analyze proper service information pertaining to vehicle service and repair.
Objective 3	Differentiate gasoline engine and diesel engine operation and construction.
Objective 4	Formulate general diagnostic service applications.

Student Learning Outcomes

Upon satisfactory completion of this course, students will be able to:

- | | |
|-----------|--|
| Outcome 1 | Describe the function and operation of key diesel systems. |
| Outcome 2 | Properly analyze service information unique to diesel systems. |
| Outcome 3 | Perform maintenance and light repair unique to diesel systems. |

Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Participation	Provide feedback during discussions and active involvement in assignments.
Lecture	Lectures will stimulate discussion and learning on theoretical and knowledge-based material.
Laboratory	Perform assigned laboratory tasks involving vehicles, equipment, and service information.
Collaborative/Team	Respectful, active interaction in group activities.
Discussion	Provide feedback during discussions and active involvement in assignments.

Methods of Evaluation

Method	Please provide a description or examples of how each evaluation method will be used in this course.	Type of Assignment
Student participation/contribution	Provide feedback during discussions and active involvement in assignments.	In Class Only
Mid-term and final evaluations	Cumulative midterm and final with a hands-on portion.	In and Out of Class
Tests/Quizzes/Examinations	Periodic quizzes.	In and Out of Class
Laboratory projects	The lab activities will require hands-on, live or simulated vehicle in a live or simulated setting.	In Class Only
Term or research papers	Research and present information on assigned applicable topic.	In and Out of Class
Written homework	As assigned after each session.	In and Out of Class

Assignments
Other In-class Assignments

Subject to, but not limited to:

- Reading assignments for required text
- Chapter review questions
- Research project/book report/oral presentation
- Classroom discussions
- Tests
- Quizzes
- Research project

Other Out-of-class Assignments

- Homework (2hrs per week)
- Quiz and exam preparation (1hr per week)
- Course related research (1hr per week)
- Course related reading (2hrs per week)

Grade Methods

Letter Grade Only

Distance Education Checklist

Include the percentage of online and on-campus instruction you anticipate.

Online %

50

On-campus %

50

Lab Courses

How will the lab component of your course be differentiated from the lecture component of the course?

The lab activities require hands-on, live vehicles or equipment. There is physical interaction with the vehicles and the learner based on service procedures and required equipment.

From the COR list, what activities are specified as lab, and how will those be monitored by the instructor?

Lab component of the course will be completed in a laboratory environment on campus under the supervision of an appropriate facilitator.

How will you assess the online delivery of lab activities?

Laboratory activities will not be delivered in the online setting, only in person.

Instructional Materials and Resources

If you use any other technologies in addition to the college LMS, what other technologies will you use and how are you ensuring student data security?

SP2 online safety training. Each learner is responsible to setup and maintain their own account.

If used, explain how specific materials and resources outside the LMS will be used to enhance student learning.

SP2 - free account provided to all used to ensure the learners ability to distinguish safe working practices and conditions from unsafe practices and conditions.

Effective Student/Faculty Contact

Which of the following methods of regular, timely, and effective student/faculty contact will be used in this course?

Within Course Management System:

Discussion forums with substantive instructor participation

Online quizzes and examinations

Regular virtual office hours

Weekly announcements

External to Course Management System:

Direct e-mail

Synchronous audio/video

Briefly discuss how the selected strategies above will be used to maintain Regular Effective Contact in the course.

Regular effective contact will be practiced through online lecture, discussion board postings, email communications, regular announcements, prompt grading and feedback of assignments, and virtual office hours. This contact between the facilitator and learner on a regular basis will enhance learner confidence and understanding and promote critical thinking and analyzation of subject matter.

If interacting with students outside the LMS, explain how additional interactions with students outside the LMS will enhance student learning.

Interaction between instructor and learner will help to enhance learning and understanding of subject material.

Other Information

Provide any other relevant information that will help the Curriculum Committee assess the viability of offering this course in an online or hybrid modality.

With the uncertainty of the teaching environment, enabling the lecture portion of this course to be delivered in an online setting, while keeping the hands-on portion face-to-face, will ensure learners can access needed training to ensure knowledge and experience is achieved to gain employment in the automotive field.

MIS Course Data

CIP Code

47.0604 - Automobile/Automotive Mechanics Technology/Technician.

TOP Code

094800 - Automotive Technology

SAM Code

C - Clearly Occupational

Basic Skills Status

Not Basic Skills

Prior College Level

Not applicable

Cooperative Work Experience

Not a Coop Course

Course Classification Status

Credit Course

Approved Special Class

Not special class

Noncredit Category

Not Applicable, Credit Course

Funding Agency Category

Not Applicable

Program Status

Program Applicable

Transfer Status

Transferable to CSU only

General Education Status

Y = Not applicable

Support Course Status

N = Course is not a support course

Allow Audit

Yes

Repeatability

No

Materials Fee

No

Additional Fees?

No

Approvals**Curriculum Committee Approval Date**

3/17/2022

Academic Senate Approval Date

3/24/2022

Board of Trustees Approval Date

4/22/2022

Chancellor's Office Approval Date

5/08/2022

Course Control Number

CCC000631489

Programs referencing this courseAutomotive Air Conditioning Certificate of Achievement (<http://catalog.collegeofthedesert.eduundefined/?key=104>)Automotive Braking Systems Certificate of Achievement (<http://catalog.collegeofthedesert.eduundefined/?key=109>)Automotive Light and Medium Duty Diesel Certificate of Achievement (<http://catalog.collegeofthedesert.eduundefined/?key=111>)Automotive Steering, Suspension, Alignment Certificate of Achievement (<http://catalog.collegeofthedesert.eduundefined/?key=112>)Automotive Introductions Certificate of Achievement (<http://catalog.collegeofthedesert.eduundefined/?key=201>)Automotive Technology AS Degree (<http://catalog.collegeofthedesert.eduundefined/?key=57>)