

Course Outline of Record

1. Course Code: AUTO-093B
2. a. Long Course Title: Light/Medium Duty Diesel Systems  
 b. Short Course Title: DIESEL SYSTEMS
3. a. Catalog Course 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.  
 b. Class Schedule Course 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.  
 c. Semester Cycle (if applicable): N/A  
 d. Name of Approved Program(s):  
 • AUTOMOTIVE TECHNOLOGY AS Degree for Employment Preparation
4. Total Units: 4.00      Total Semester Hrs: 108.00  
 Lecture Units: 3      Semester Lecture Hrs: 54.00  
 Lab Units: 1      Semester Lab Hrs: 54.00  
 Class Size Maximum: 21      Allow Audit: Yes  
 Repeatability No Repeats Allowed  
 Justification 0
5. Prerequisite or Corequisite Courses or Advisories:  
*Course with requisite(s) and/or advisory is required to complete Content Review Matrix (CCForm1-A)*  
 Advisory: AUTO 010  
 Advisory: RDG 061
6. Textbooks, Required Reading or Software: (List in APA or MLA format.)  
 a. Sean Bennett (2012). Modern Diesel Technology: Light Duty Diesels, (1st/e). Cengage Learning .  
 College Level: Yes  
 Flesch-Kincaid reading level: N/A
7. Entrance Skills: *Before entering the course students must be able:*

**Advisory skills:**

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a.

Demonstrate knowledge of shop safety.

- AUTO 010 - Describe shop safety practices.

b.

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

- AUTO 010 - Perform a detailed vehicle inspection.

c.

Display teamwork.

- AUTO 010 - Display team work.

d.

Use various reading strategies to prepare, read and comprehend expository text

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- RDG 061 - Use SQ3R &/or SOAR along with outlining, note-taking, mapping summarizing and other strategies to prepare, read, & comprehend expository text.

e.

## Read a variety of texts fluently

- RDG 061 - Read a variety of texts fluently.

f.

## Write organized summaries & reactions that capture main idea and supporting details

- RDG 061 - Write organized summaries & reactions that capture main idea and supporting details.

g.

## Understand multiple word meanings, uses & synonyms

- RDG 061 - Understand multiple word meanings, uses & synonyms

### 8. Course Content and Scope:

#### Lecture:

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: *(if the "Lab Hours" is greater than zero this is required)*

Shop safety.  
Vehicle lifting  
Complete safety training

Engine identification  
Component Identification

Intake and exhaust systems.  
Service and maintenance

Cooling System  
Proper inspection  
Identification  
Testing

Lubricating System  
Proper inspection  
Identification  
Testing

Fuel systems.

System inspection

Component identification

Engine electrical (cranking and charging).

Component identification

Servicing and maintenance.

Proper service procedure identification

Application of service

Maintenance

Diagnostics and testing.

## 9. Course Student Learning Outcomes:

1.

Identify shop safety procedures.

2.

Successfully complete a repair order in compliance with the State of California

3.

Describe the function and operation of key diesel systems.

4.

Properly analyze service information unique to diesel systems.

5.

Perform maintenance and light repair unique to diesel systems.

## 10. Course Objectives: *Upon completion of this course, students will be able to:*

a. Demonstrate proper completion of California regulated repair order complete with all information required by the state of California.

b. Analyze proper service information pertaining to vehicle service and repair.

c. Differentiate gasoline engine and diesel engine operation and construction.

d. Formulate general diagnostic service applications.

## 11. Methods of Instruction: *(Integration: Elements should validate parallel course outline elements)*

a. Activity

b. Collaborative/Team

c. Demonstration, Repetition/Practice

d. Discussion

e. Individualized Study

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- f. Laboratory
- g. Lecture
- h. Observation
- i. Participation
- j. Role Playing

12. Assignments: *(List samples of specific activities/assignments students are expected to complete both in and outside of class.)*

In Class Hours: 108.00

Outside Class Hours: 108.00

a. In-class Assignments

Subject to, but not limited  
Reading assignments for required text  
Chapter review questions  
Research project/book report/oral presentation.

Classroom discussions  
Tests  
Quizzes  
Research project

b. Out-of-class Assignments

Shop interview  
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.

13. Methods of Evaluating Student Progress: *The student will demonstrate proficiency by:*

- College level or pre-collegiate essays
- Written homework
- Term or research papers
- Reading reports
- Laboratory projects
- Field/physical activity observations
- Presentations/student demonstration observations
- Group activity participation/observation
- Product/project development evaluation
- Self/peer assessment and portfolio evaluation
- True/false/multiple choice examinations
- Mid-term and final evaluations
- Student participation/contribution
- Student preparation
- Oral and practical examination

14. Methods of Evaluating: Additional Assessment Information:

15. Need/Purpose/Rationale -- *All courses must meet one or more CCC missions.*

PO-BS Critical Thinking

Locate questions and problems as a result of conversation, reading, and lectures

Communicate meaningfully with others.

PO-BS Problem Solving

Recognize the importance of checking a proposed solution to verify that it satisfies the requirements of a problem.

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Identify what isn't known, but needs to be known in order to solve a problem (depending on the problem domain, reading and/or mathematical skills are helpful).

IO - Critical Thinking and Communication

Apply principles of logic to problem solve and reason with a fair and open mind.

IO - Global Citizenship - Ethical Behavior

Integrate universally accepted values such as honesty, responsibility, respect, fairness, courage and compassion into judgments and decision-making.

Exhibit respect for self and others.

## 16. Comparable Transfer Course

University System	Campus	Course Number	Course Title	Catalog Year
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## 17. Special Materials and/or Equipment Required of Students:

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18. Materials Fees:  Required Material?

Material or Item	Cost Per Unit	Total Cost
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## 19. Provide Reasons for the Substantial Modifications or New Course:

Change requisite and entrance skills to Reading 061

20. a. Cross-Listed Course (*Enter Course Code*): AUTO-093B

b. Replacement Course (*Enter original Course Code*): AUTO-093B

21. Grading Method (*choose one*): Letter Grade Only

## 22. MIS Course Data Elements

a. Course Control Number [CB00]: CCC000567626

b. T.O.P. Code [CB03]: 94800.00 - Automotive Technology

c. Credit Status [CB04]: D - Credit - Degree Applicable

d. Course Transfer Status [CB05]: C = Non-Transferable

e. Basic Skills Status [CB08]: 2N = Not basic skills course

f. Vocational Status [CB09]: Clearly Occupational

g. Course Classification [CB11]: Y - Credit Course

h. Special Class Status [CB13]: N - Not Special

i. Course CAN Code [CB14]: N/A

j. Course Prior to College Level [CB21]: Y = Not Applicable

k. Course Noncredit Category [CB22]: Y - Not Applicable

l. Funding Agency Category [CB23]: Y = Not Applicable

m. Program Status [CB24]: 1 = Program Applicable

Name of Approved Program (*if program-applicable*): AUTOMOTIVE TECHNOLOGY

*Attach listings of Degree and/or Certificate Programs showing this course as a required or a restricted elective.)*

## 23. Enrollment - Estimate Enrollment

First Year: 12

Third Year: 21

## 24. Resources - Faculty - Discipline and Other Qualifications:

a. Sufficient Faculty Resources: Yes

b. If No, list number of FTE needed to offer this course: N/A

## 25. Additional Equipment and/or Supplies Needed and Source of Funding.

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N/A

26. Additional Construction or Modification of Existing Classroom Space Needed. (*Explain:*)

N/A

27. FOR NEW OR SUBSTANTIALLY MODIFIED COURSES

Library and/or Learning Resources Present in the Collection are Sufficient to Meet the Need of the Students Enrolled in the Course: Yes

28. Originator Douglas Hugh Redman Origination Date 11/09/17