DET 190.1L Course Outline as of Fall 2017

CATALOG INFORMATION

Dept and Nbr: DET 190.1L Title: ALT FUELS / FUEL SYS LAB
Full Title: Alternative Fuels and Fuel Systems Lab
Last Reviewed: 9/27/2010

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	1.00	Lecture Scheduled	0	17.5	Lecture Scheduled	0
Minimum	1.00	Lab Scheduled	3.00	6	Lab Scheduled	52.50
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 0.00 Total Student Learning Hours: 52.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade Only
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	
Formerly:	

Catalog Description:
Laboratory application of principles and practices for use of non-traditional fuels in vehicles and conversion of internal combustion fuel systems to natural gas, bio-fuels, and other alternative fuel systems.

Prerequisites/Corequisites:
Course Completion or Current Enrollment in DET 190.1

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:
Description: Laboratory application of principles and practices for use of non-traditional fuels in vehicles and conversion of internal combustion fuel systems to natural gas, bio-fuels, and other alternative fuel systems. (Grade Only)
Prerequisites/Corequisites: Course Completion or Current Enrollment in DET 190.1
Recommended:
Limits on Enrollment:

Transfer Credit:
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**	Effective:	Inactive:
CSU GE:	**Transfer Area**	Effective:	Inactive:
IGETC:	**Transfer Area**	Effective:	Inactive:

CSU Transfer:	Effective:	Inactive:
UC Transfer:	Effective:	Inactive:

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Outcomes and Objectives:
Upon successful completion of the course, students will be able to:
1. Relate specific alternative fuels to their appropriate application.
2. Define fuel system and system component operations.
3. Explain safe procedures for fuel handling.
4. Employ maintenance directions related to alternative fuel system care.
5. Perform inspection and testing procedures for alternative fuel systems.
6. Assess maintenance and repair needs on specific units and complete needed repairs and maintenance.
7. Convert traditional fuel vehicle engines and/or components to alternative fuel engines and/or components.
8. Discuss and apply personal, shop, and environmental safety procedures.

Topics and Scope:

I. Fuel handling safety procedures
  A. Personal
  B. Environmental
  C. Shop
  D. Regulations
II. Alternative fuel applications
III. Fuel system and fuel component operations
IV. Alternative fuel conversions
  A. Bio diesel
  B. Ethanol
  C. SVO (straight vegetable oil)
  D. In-wheel electrically generated hybrid
  E. Direct injected hybrids
  F. Performing alternative fuel conversions
V. Fuel and fuel system maintenance and repairs

A. Scheduled maintenance
B. Inspection and testing
C. System diagnosis
D. Component repair or replacement
E. Work orders

Assignment:

1. Lab activities: Labs activities may vary from semester to semester and may include but are not limited to:
   a. Fabrication of alternative fuel processors
   b. Simple alternative fuel conversions
   c. Installation of pre-made alternative fuel kits
   d. Efficiency tests on alternative fuel systems
   e. Maintenance and repair/replacement activities
   f. Services for custom installation jobs
2. Lab reports:
   a. Analyses of efficiency tests
   b. Recommendations regarding needed adjustments or repairs
   c. Work progress notes on fabrications and/or conversions
   d. Work orders for custom installation jobs
3. Final project--a completed fabrication, conversion, or installation such as:
   a. Fabrication of alternative fuel processor
   b. Simple alternative fuel conversion
   c. Installation of pre-made alternative fuel kit
4. Reading: 5 - 10 pages per week.

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments and skill demonstrations are more appropriate for this course.	Writing 0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Lab reports	Problem solving 20 - 30%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

Lab activities and final projects	Skill Demonstrations 60 - 70%

Exams: All forms of formal testing, other than skill performance exams.

None	Exams 0 - 0%

Other: Includes any assessment tools that do not logically fit into the above categories.

Attendance and participation	Other Category 5 - 10%

Representative Textbooks and Materials:
Instructor prepared materials.