DET 89 Course Outline as of Fall 2009

CATALOG INFORMATION

Dept and Nbr: DET 89 Title: HEAVY DUTY ELECTRICAL Full Title: Heavy Duty Equipment Electrical Systems Last Reviewed: 1/22/2018

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	2.25	17.5	Lecture Scheduled	39.38
Minimum	3.00	Lab Scheduled	2.25	8	Lab Scheduled	39.38
		Contact DHR	0		Contact DHR	0
		Contact Total	4.50		Contact Total	78.75
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 78.75

Total Student Learning Hours: 157.50

Title 5 Category:	AA Degree Applicable
Grading:	Grade Only
Repeatability:	00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:	AGMEC 89
Formerly:	DET 65

Catalog Description:

Principles of operation of electrical and electronic components and systems used in trucks, construction and agricultural equipment. Introduction to electronic control systems.

Prerequisites/Corequisites:

Recommended Preparation: Eligibility for ENGL 100 or ESL 100 and Course Completion of DET 80

Limits on Enrollment:

Schedule of Classes Information:

Description: Principles of operation of electrical and electronic components and systems used in trucks, construction and agricultural equipment. Introduction to electronic control systems. (Grade Only) Prerequisites/Corequisites: Recommended: Eligibility for ENGL 100 or ESL 100 and Course Completion of DET 80 Limits on Enrollment: Transfer Credit: CSU;

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree: CSU GE:	Area Transfer Area			Effective: Effective:	Inactive: Inactive:
IGETC:	Transfer Area			Effective:	Inactive:
CSU Transfer:	Transferable	Effective:	Fall 1981	Inactive:	Fall 2014
UC Transfer:		Effective:		Inactive:	

CID:

Certificate/Major Applicable:

Both Certificate and Major Applicable

COURSE CONTENT

Outcomes and Objectives:

Upon successful completion of this course students will be able to:

1. Explain the fundamentals of alternating current (AC), direct current (DC), series and parallel circuits.

- 2. Read and interpret schematic diagrams.
- 3. Evaluate electrical circuits from schematic diagrams.
- 4. Properly use diagnostic tools related to the analysis and repair of electrical systems.
- 5. Identify, locate, and analyze electronic components and microprocessors.
- 6. Test, diagnose, and repair electrical and electronic circuits and components.
- 7. Discuss and apply personal, shop, and environmental safety procedures.

Topics and Scope:

- 1. Review:
 - a. laws and theory
 - b. diagnostic tools
 - c. direct current
 - d. alternating current
- 2. Symbols and Diagrams:
 - a. electrical symbols
 - b. use of schematic diagrams
- 3. Series and Parallel Circuits:
 - a.series circuits
 - b. parallel circuits
 - c. series-parallel circuit
- 4. Testing and Repair of Components:
 - a. battery testing
 - b. starters
 - c. alternators/generators
 - d. lighting circuits
 - e. switches and relays

f. harnesses and ECM's

- 5. Electronic Components and Microprocessors:
 - a. sensors/switches
 - b. electronic control modules
 - c. actuators
 - d. diagnosis with scanner
- 6. Testing, Diagnosis, and Repair:
 - a. using test equipment
 - b. diagnostic procedures and manuals
 - c. repair of electronic circuitry
- 7. Safety
 - a. personal
 - b. shop
 - c. environmental

Assignment:

- 1. Reading 25 pages a week
- 2. Complete lab reports
- 3. Structured lab exercises
 - a. Review and practice electrical theory exercises
 - b. Use diagnostic tools to test systems
 - c. Identify and use symbols in an electrical circuit
 - d. Draw schematics with series and parallel circuits
 - e. Locate faults in electrical circuits
 - f. Repair components in a system
 - g. Locate and test electronic components
 - h. Follow diagnostic procedures dictated by manufacturers
 - i. Disassemble, inspect and reassemble electric components.
- 4. Homework problems
- 5. 2-5 written exams

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.

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

Homework problems, Lab reports

Writing 0 - 0%	



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

Structured Lab Exercieses	Skill Demonstrations 20 - 60%
Exams: All forms of formal testing, other than skill performance exams.	
Multiple choice, Short answer	Exams 20 - 60%
Other: Includes any assessment tools that do not logically fit into the above categories.	
None	Other Category 0 - 0%

Representative Textbooks and Materials:

Heavy Duty Truck Systems, Sean Bennett, Ian Andrew Norman, Thompson Delmar Learning. 4th edition, 2006