

## FLORIDA STATE COLLEGE AT JACKSONVILLE

## NON-COLLEGE CREDIT COURSE OUTLINE

COURSE NUMBER: DIM 0303

COURSE TITLE: Diesel Electronic Systems and Controls

PREREQUISITE(S): None

COREQUISITE(S): None

STUDENT ADVISING NOTES: Suggested Course: DIM 0302

TOTAL CONTACT HOURS: 120

(For Office Use Only:  
Vocational Credits 4 )

FACULTY WORKLOAD POINTS: 4

STANDARDIZED CLASS SIZE  
ALLOCATION: 20

COURSE DESCRIPTION:

This course is designed to teach the concepts of operation of the on-board computer system as it applies to the control of diesel fuel injection systems. Topics include function and operation of DDEC, PEEC, CELECT PLUS, MACK and NAVISTAR systems with the aid of various special manufacturer tools. Special emphasis will be placed on safety and manufacturers troubleshooting procedures.

SUGGESTED TEXT(S): Heavy Duty Trucks, Robert Brady, Prentice Hall, Inc., ISBN 0-13-385659-3

IMPLEMENTATION DATE: Fall Term, 1998 (981)

REVIEW OR MODIFICATION DATE: Fall Term, 2002 (20031)

COURSE TOPICS	CONTACT HOURS <u>PER TOPIC</u>
I. Diagnose and repair electronic fuel injection systems	20
II. Test and service engine glow system	15
III. Demonstrate knowledge of engine shut down system	12
IV. Identify basic electronic fuel injection components and systems	10
V. Run scanner test on electronic fuel injection system	8
VI. Identify electronic controlled fuel injection systems	6
VII. Diagnose and repair electronic fault codes	19
VIII. Mathematics involving whole numbers, geometry, and signed numbers	15
IX. Mathematics dealing with engine systems and electrical systems	15

PROGRAM TITLE: Heavy Duty Bus and Truck Mechanics  
COURSE TITLE: Diesel Electronic Systems and Controls  
CIP NUMBER: 0647.060501

## LIST PERFORMANCE STANDARD ADDRESSED:

NUMBER(S): TITLE(S):

- 17.0 DEMONSTRATE SHOP AND OCCUPATIONAL SAFETY PROCEDURES--The student will be able to:
- 17.01 Assist in activities and job tasks, in accordance with local, state, and federal safety and environmental regulations.
  - 17.02 Identify and comply with personal and environmental safety practices associated with clothing, eye protection, hand tools, power equipment, and the handling, storage, and disposal of chemicals and hazardous materials.
- 18.0 IDENTIFY AND APPLY ELECTRICAL PRINCIPLES RELATED TO DIESEL TECHNOLOGY--The student will be able to:
- 18.01 Explain the nature of electricity.
  - 18.02 Analyze electrical circuits.
  - 18.03 Work problems using Ohm's and Kirchoff's laws.
  - 18.04 Explain magnetism and electromagnetic induction.
  - 18.05 Explain applications of alternating current (AC).
  - 18.06 Explain principles of direct current (DC) motors and generators.
  - 18.07 Explain principles of AC motors.
  - 18.08 Locate and match electrical units by their symbols on a wiring diagram.
  - 18.09 Set up and use voltmeters, ammeters, and ohmmeters.
- 19.0 IDENTIFY AND APPLY ELECTRONIC PRINCIPLES RELATED TO DIESEL TECHNOLOGY--The student will be able to:
- 19.01 Explain the principles of diodes and rectifiers.
  - 19.02 Explain the principles of voltage regulation and power supply circuits.
  - 19.03 Explain the principles of transistors.
  - 19.04 Explain the principles of the silicon-controlled rectifier (SCR).
  - 19.05 Identify components of electronic systems and explain their functions.
- 20.0 MAINTAIN AND REPAIR ELECTRICAL SYSTEMS--The student will be able to:
- 20.01 Test and service the following:
    - a. Batteries
    - b. Instruments and gauges
  - 20.02 Test and repair the following systems:
    - a. Starting
    - b. Charging

LIST PERFORMANCE STANDARD ADDRESSED: (CONTINUED)

NUMBER(S):

TITLE(S):

c. Ignition

d. Lighting and accessories

20.03 Inspect, remove, clean, and install batteries and cables for parallel and/or series hookups.

20.04 Install batteries correctly where two or more batteries are used.

20.05 Identify, diagnose, remove and replace electronic sensors.

20.06 Identify the methods for testing and repair of electronic governors.

21.0 DEMONSTRATE THE QUALIFICATIONS FOR EMPLOYMENT--The student will be able to:

21.01 Demonstrate shop organization, management, and safety requirements for an electrical and electronics technician.

21.02 Demonstrate the use of tools and equipment required for an electrical and electronics technician.

21.03 Demonstrate workplace communication skills required by an electrical and electronics technician.

21.04 Demonstrate the application of math and science principles required for an electrical and electronics technician's job tasks.

21.05 Demonstrate employability skills as an electrical and electronics technician.



NOTE: Use either the Tab key or mouse click to move from field to field. The box will expand to accommodate your entry.

<i>Section 1</i>	
COURSE PREFIX AND NUMBER: <u>DIM0303</u>	SEMESTER CREDIT HOURS: <u>120</u>
COURSE TITLE: <u>Diesel Electronic Systems and Controls</u>	

<i>Section 2</i>		
TYPE OF COURSE: (Click on the box to check all that apply)		
<input type="checkbox"/> AA Elective	<input type="checkbox"/> AS Required Professional Course	<input type="checkbox"/> College Prep
<input type="checkbox"/> AS Professional Elective	<input type="checkbox"/> AAS Required Professional Course	<input type="checkbox"/> Technical Certificate
<input type="checkbox"/> Other _____	<input checked="" type="checkbox"/> PSAV	<input type="checkbox"/> Apprenticeship
<input type="checkbox"/> General Education: (For General Education courses, you must also complete Section 3 and Section 7)		

<i>Section 3 (If applicable)</i>		
INDICATE BELOW THE DISCIPLINE AREA FOR GENERAL EDUCATION COURSES:		
<input type="checkbox"/> Communications	<input type="checkbox"/> Social & Behavioral Sciences	<input type="checkbox"/> Mathematics
<input type="checkbox"/> Natural Sciences	<input type="checkbox"/> Humanities	

<i>Section 4</i>					
INTELLECTUAL COMPETENCIES:					
<input checked="" type="checkbox"/> Reading	<input type="checkbox"/> Speaking	<input checked="" type="checkbox"/> Critical Analysis	<input type="checkbox"/> Quantitative Skills	<input type="checkbox"/> Scientific Method of Inquiry	
<input checked="" type="checkbox"/> Writing	<input checked="" type="checkbox"/> Listening	<input checked="" type="checkbox"/> Information Literacy	<input type="checkbox"/> Ethical Judgment	<input checked="" type="checkbox"/> Working Collaboratively	

<i>Section 5</i>	
LEARNING OUTCOMES	METHOD OF ASSESSMENT
• Demonstrate Shop And Occupational Safety Procedures	Instructor observation of task performance using the NATEF Task list and Multiple Choice exam.
• Identify And Apply Electrical Principles Related To Diesel Technology	Instructor observation of task performance using the NATEF Task list and Multiple Choice exam.
• Identify And Apply Electronic Principles Related To Diesel Technology	Instructor observation of task performance using the NATEF Task list and Multiple Choice exam.
• Maintain And Repair Electrical Systems	Instructor observation of task performance using the NATEF Task list and Multiple Choice exam.
• Demonstrate The Qualifications For Employment	Instructor observation of task performance using the NATEF Task list and Multiple Choice exam.

<i>Section 6</i>	
Name of Person Completing This Form: <u>Gary Denton</u>	Date: <u>Apr. 25, 2008</u>