MINNESOTA WEST COMMUNITY & TECHNICAL COLLEGE COURSE OUTLINE

Faculty is required to have the outline submitted to the Academic Affairs Office. The course outline is the form used for approval of new courses by the Academic Affairs and Standards Council.

DEPT. Automotive Technology               COURSE NUMBER AUTO 2108:

NUMBER OF CREDITS: 3

COURSE TITLE: Introduction to Hybrid Electric Vehicle

CATALOG DESCRIPTION :

This course provides basic hybrid electric vehicle safety procedures: common hybrid electric component fundamentals: current hybrid vehicle design: an introduction to hybrid electric vehicle maintenance and troubleshooting and an introduction to hybrid electric vehicle test equipment and procedures. 3 credits (2 lecture 1 lab )

AUDIENCE : Second Year AAS Students, unless use as an elective

FULFILLS MN TRANSFER CURRICULUM AREA(S) (Leave blank if not applicable) Area: by meeting the following competencies:

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PREREQUISITES OR NECESSARY ENTRY SKILLS/KNOWLEDGE: Auto 1100, and Auto1111

LENGTH OF COURSE : Semester class

THIS COURSE IS USUALLY OFFERED:

Every other year fall X spring summer undetermined

Four goals are emphasized in course at Minnesota West Community & Technical College:

1) ACADEMIC CONTENT: The academic objectives of this course are:

a. Understanding the Complexity of an Automobile as a whole unit
b. Defining Automotive Hybrid systems and their relationship to other systems

c. Learning Procedures for using advanced electrical diagnostic equipment

2) THINKING SKILLS: This course will help students improve the effectiveness of their thinking skills through:

a. Understand the basic concept and design of Hybrid vehicles
b. Mentally diagnose and repair hypothetical Hybrid models
c. Theorize potential problems with Hybrid sub systems.

3) COMMUNICATIONS SKILLS: This course will help students improve their oral and written communication skills through:

a. Explain the multiple parts of an Hybrid system
b. Simulate customer/technician interaction with other students

4) HUMAN DIVERSITY: This course will help students recognize, understand, and appreciate human diversity through:

a. Recognize relational diversity issues with customers and management
b. Anticipate and address interpersonal relationship issues with other students

TOPICS TO BE COVERED:

a. Define Series Power flow
b. Define Parallel Power flow
c. Identify common hybrid vehicle powertrain sub-systems
d. Identify different manufactures’ Hybrid Technology
e. Describe Hybrid vehicle components
f. Identify advantages of Hybrid vehicle technology
g. Identify safe high voltage service disconnect procedures
h. Perform safe high voltage service disconnect procedures
i. Identify personal protection equipment
j. Evaluate Hybrid vehicle repair tools
k. Analyze high voltage cables
l. Perform insulation checks
m. Evaluate high voltage batteries
n. Perform power law calculations
o. Analyze scan data

LIST OF EXPECTED COURSE OUTCOMES:

After completing this course, The student should have the knowledge and application to:

a. Identify Hybrid components
b. Work safely with the equipment to fix the Hybrid vehicle correctly
c. Recognize and handle Hybrid vehicle safety protocols
d. Interact with other students and the instructor in a professional manner reflective of an automotive technician
e. Perform Hybrid vehicle maintenance and repair
f. The required outcomes follow the Auto Service Technician (AST) model of the National Automotive Technical Education Foundation (NATEF) certification program.

LEARNING/TEACHING TECHNIQUES USED IN THIS COURSE:

X Collaborative Learning X Problem Solving
Student Presentations X Interactive Lectures

Creative Projects Individual Coaching

X Lecture X Films/Videos/Slides

X Demonstrations X Other (describe below)

X Lab Periodical Research and Summary

ASSIGNMENTS AND ASSESSMENTS FOR THIS CLASS INCLUDE:

X Reading X Tests X Individual Projects

X Oral Presentations X Worksheets X Collaborative Projects

X Textbook Problem X Papers Portfolio

X Group Problems Term Paper

X Other: NATEF Tasks

EXPECTED STUDENT LEARNING OUTCOMES:

a. Identify the Hybrid vehicle systems

b. Work safely with all equipment and tools

c. Demonstrate professional interactions with others

d. Perform Hybrid maintenance and repair procedures

Veteran Services: Minnesota West is dedicated to assisting veterans and eligible family members in achieving their educational goals efficiently. Active duty and reserve/guard military members should advise their instructor of all regularly scheduled military appointments and duties that conflict with scheduled course requirements. Instructors will make every effort to work with the student to identify adjusted timelines. If you are a veteran, please contact the Minnesota West Veterans Service Office.
To receive reasonable accommodations for a documented disability, please contact the campus Student Services Advisor or campus Disability Coordinator as arrangements must be made in advance. In addition, students are encouraged to notify their instructor.

This document is available in alternative formats to individuals with disabilities by contacting the Student Services Advisor or by calling 800-658-2330 or via your preferred Telecommunications Relay Service.

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Creative Projects Individual Coaching

X Lecture X Films/Videos/Slides

Demonstrations Other (describe below)

X Lab

ASSIGNMENTS AND ASSESSMENTS FOR THIS CLASS INCLUDE:

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Oral Presentations X Worksheets X Collaborative Projects

X Textbook Problems Papers Portfolio

Group Problems Term Paper

Other (describe below)

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