Print Date: 7/14/14

Course Objectives/Course Outline
Spokane Community College

Course Title: Theory of Hybrids
Prefix and Course Number: AUTO 227

Course Learning Outcomes:
By the end of this course, a student should be able to:

- Discuss the differences between standard and hybrid vehicles.
- Identify the precautions used when working on electric drive vehicles.
- Describe precautions used when working with batteries.
- Differentiate between battery types.
- Identify components of an electric drive vehicle.
- Describe AC & DC motor theory.
- Describe generator function.

Course Outline:

I. Introduction to Electric Vehicles
   A. The Electric Drive
   B. Alternative Fuels
   C. The Basics of Electric Vehicles
   D. Battery-Operated Electric Vehicles
   E. Hybrid Electric Vehicles
   F. History
   G. Precautions for Working on Electric Drive Vehicles
   H. Battery Precautions
   I. Review

II. Motor and Generator Basics
   A. Introduction
   B. Basic Motor Operation
   C. DC Motors
   D. AC Motors
   E. Generators
   F. Motor/Generators
   G. Controllers
   H. Review

III. Battery Basics
   A. Introduction
   B. Basic Battery Theory
   C. Battery Ratings
   D. Common Types of Batteries
   E. High-Voltage Batteries
   F. Lead-Acid Batteries
   G. Nickel-Based Batteries
   H. Lithium-Based Batteries
   I. Ultra-Capacitors