SYLLABUS
PART I
EDISON STATE COMMUNITY COLLEGE
EGR 262S ELECTRIC VEHICLE STORAGE TECHNOLOGY
3 CREDIT HOURS

COURSE DESCRIPTION

Introduction to battery and storage systems of electric vehicles (EV) with an emphasis placed on battery chemistry and historical systems in use. Topics covered include lithium-ion, nickel-metal hydride, lead-acid, ultracapacitors, and solid-state batteries. The course will also review the most popular technologies in company use today. There will be lectures and hands-on labs to illustrate a practical and theoretical understanding of the technologies. Prerequisite: EGR 160S. Lab Fee.

COURSE GOALS

The student will:

Bloom's Level		Program Outcomes
1	1. Understand safety requirements of working with batteries and storage systems.	4
2	2. Determine the future needs for EVs based on historical trends and projected future use.	2
1	3. Describe different EV storage technologies and their applications.	1, 2
2	4. Describe battery chemistry types and available energy.	2, 3
2	5. Describe applications of battery types and their evolution.	1, 2, 3
2	6. Explore hands-on examples of battery systems in EV and hybrids.	3, 4
3	7. Demonstrate ways to troubleshoot and rebuild battery systems.	4
2	8. Explore different approaches to battery designs from different manufacturers.	2, 3
2	9. Distinguish between different hybrid and EV battery system styles.	2, 3
3	10. Estimate energy potential in a battery system.	3
1	11. Identify skills needed for future EV battery sector jobs.	1, 2, 3, 4
3	12. Apply engineering mechanics and electrical principles to solve problems.	4

CORE VALUES

The Core Values are a set of principles that guide in creating educational programs and environments at Edison State. They include communication, ethics, critical thinking, human diversity, inquiry/respect for learning, and interpersonal skills/teamwork. The goals, objectives, and activities in this course will introduce/reinforce these Core Values whenever appropriate.

TOPIC OUTLINE

1. Introduction to identifying a battery and working safely with storage systems
2. Battery storage, including history, political issues, and costs
3. Principles of energy storage and chemistry
4. Battery systems, including NiMh sources and applications
5. Battery systems, including Li Ion sources and applications
6. Battery systems, including lead-acid sources and applications

7. Efficiency of battery systems and recycling
8. Integration of battery wiring including schematics of systems
9. Hybrid systems compared to pure EV systems
10. Laboratory exercises to rebuild and troubleshoot systems
11. Skills needed in the battery manufacturing sector and its growth