

SYLLABUS
PART I
EDISON STATE COMMUNITY COLLEGE
EGR 160S INTRODUCTION TO ELECTRIC VEHICLE TECHNOLOGIES
3 CREDIT HOURS

COURSE DESCRIPTION

Introduction to the principles and history of electric vehicle (EV) technologies with an emphasis placed on the systems in use today. Topics covered include the history, patents, manufacturers, and designs. This course will provide an overview of the most common storage systems, motor systems, and drivetrain designs used in the EV industry today. There will be lectures and hands-on labs to illustrate a practical and theoretical understanding of the technologies. Prerequisite: Proficiency in basic math grade C or better in MTH 093D or equivalent. Lab fee.

COURSE GOALS

The student will:

Bloom's Level		Program Outcomes
1	1. Understand the consumer needs in the EV sector.	1
2	2. Determine the future needs for EVs based on historical trends and projected future use.	1
1	3. Identify different EV technologies and their applications.	1, 2, 3
1	4. Describe principles of the mechanics of energy.	2
2	5. Explore applications of battery technologies and their history.	1, 2, 3
2	6. Explore applications of EV motors and their history.	1, 2, 3
2	7. Explore applications of EV powertrain and its history.	2, 3
2	8. Explore different approaches to EV designs in different manufacturers.	1, 2, 3
2	9. Distinguish between different hybrid and EV motors and battery systems.	1, 2
2	10. Identify the potential of future EV technologies.	1, 2, 3
3	11. Estimate energy efficiency of various EV designs.	2, 3
1	12. Identify skills needed for future EV sector jobs.	1
3	13. Apply engineering mechanics and electrical principles to solve problems.	2, 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 EVs and EV classification
2. EV history, political issues, and costs
3. Principles of energy mechanics for EVs
4. Sources and applications of battery systems
5. Sources and applications of motor systems

6. Sources and applications of drive systems
7. EV system efficiency
8. EV patents and governmental issues
9. Hybrid systems compared to pure EV systems
10. Case study – practical and available technologies
11. Calculations of effectiveness to determine the best models
12. Skills needed in the growing EV sector