SAN JUAN COLLEGE
Success Matters

DISL 290-ALTERNATIVE FUELS 3 CREDITS (2+2P)

SYLLABUS

CATALOG DESCRIPTION

Instructor facilitated student research into alternative fuels. The class is designed as a research of the manufacturing, benefits, problems with various alternative fuels including bio-diesel, bio-mass, alcohol, hydrogen fuel cells, electrical, and hybrid drives. Basic chemistry behind the operation and manufacturing of various fuels will be discussed and various types of alternative fuel samples will be produced. Safety will be strictly enforced.

Prerequisites: None

Semester Offered: Fall

Common Student Learning Outcomes

Upon successful completion of San Juan College programs and degrees, the student will demonstrate competency in…

BROAD AND SPECIALIZED LEARNING
Students will actively and independently acquire, apply, and adapt skills and knowledge with an awareness of global contexts.

CRITICAL THINKING
Students will think analytically and creatively to explore ideas, make connections, draw conclusions and solve problems.

CULTURAL AND CIVIC ENGAGEMENT
Students will act purposefully, reflectively, and ethically in diverse and complex environments.

EFFECTIVE COMMUNICATION
Students will exchange ideas and information with clarity in multiple contexts.

INFORMATION LITERACY
Students will be able to recognize when information is needed and have the ability to locate, evaluate, and use it effectively.

INTEGRATING TECHNOLOGIES
Students will demonstrate fluency in the application and use of technologies in multiple contexts.

Student work from this class may be randomly selected and used anonymously for assessment of course, program, and/or institutional learning outcomes. For more information, please refer to the Dean of the appropriate School.

Course Learning Outcomes

1. To provide the student with an understanding of the chemistry, infrastructure, problems, and benefits of alternative fuels and power sources.

Specific Learning Objectives

Upon successful completion of the course, the student will be able to…

1. Outline the basic chemical structure of fuels and how it relates to bio fuels.
2. Demonstrate how bio diesel is manufactured and blended.
3. Demonstrate an understanding of how ethanol based fuels are manufactured and blended.
4. Explain how hydrogen fueled systems work.
5. Show how hybrid drive and electric drive systems operate.
6. Identify the problems that are posed when using bio and alternative fuels.
7. List the benefits of using bio fuels.
8. Discuss the social and economic factors of bio fuel manufacturing at the macro and micro level.
9. Make samples of various alternative fuels or power sources including
    a. Bio Diesel from a virgin source.
    b. Bio diesel from used cooking oil.
    c. Hydrogen through electrolysis
    d. Demonstrate an understanding of how a sample of ethanol fuel would be created
    e. Micro level construction of electric generation and storage.
10. Demonstrate understanding of learning objectives through a presentation delivered to a peer group.