



## **SYLLABUS**

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### **CATALOG DESCRIPTION**

This course will study various aspects of petroleum geology and fossil fuels. Content will include formation and classification of regional sedimentary rocks, geologic history of the Four Corners Region, and formation, detection, and extraction of oil, natural gas, and coal. This class includes a field trip.

Prerequisites:       None

Semester Offered:   Summer

#### **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**

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

1. Describe the formation and classification of sedimentary rocks linked to hydrocarbon formation and storage.
2. Understand the geologic history of the San Juan Basin that led to the formation of the local hydrocarbon and coal deposits.
3. Understand the formation, exploration, and extraction of hydrocarbon resources.
4. Understand the formation, classification, and extraction of coal.
5. Understand the geologic cross-section for well placement.
6. Recognize and classify clastic sedimentary rocks.

7. Identify local sandstones that serve as reservoir rocks.
8. Describe the types and structures of various hydrocarbons.
9. Explain the viscosity and volatility of hydrocarbons.
10. Understand the hypotheses of the formation and evolution of hydrocarbons.
11. Describe the characteristics of reservoir rocks, including porosity and permeability.
12. Recognize the various types of hydrocarbon traps.
13. Recognize the tools used in oil and natural gas exploration and recovery.
14. Describe alternative reserves of hydrocarbons.
15. Explain the formation of coal.
16. Identify the grades of coal, including samples from local formations.
17. Understand the formation and extraction of coalbed methane.
18. Describe the world's capacity for production of oil, and the volume of remaining reserves.
19. Explain environmental issues regarding fossil fuel resources.
20. Understand geologic cross-sections and the legal description process.