

Energy (ENER) 1005 Energy Data Management and Analysis (1)

Advisory: Completion of Computer Science 1702 or COSC 1703 strongly recommended

Total hours: 14 hours lecture; 12 hours lab (26 hours total)

Catalog Description: This course is designed as a brief overview of the data software programs used by oil, gas, and energy companies to track, monitor and calculate reservoir modeling, production management, economics, charting and graphing data. The course will provide a basic introduction to the various data software, their functions, purposes, and uses.

Type of Class/Course: Degree credit

Text: None

Additional Instructional Materials:

<http://www.conservation.ca.gov/>

<http://www.consrv.ca.gov/DOG/index.htm>

<http://www.landmark.com>

<http://www.sis.slb.com/petrel>

<http://www.merak.com>

http://www.slb.com/content/services/software/geo/petrel/2008_1.asp

<http://www.slb.com/content/services/software/reseng/index.asp>

http://www.slb.com/content/services/software/valuerisk/software_peep.ap

Course Objectives

By the end of the course a successful student will be able to

1. Identify each program by name and acronym,
2. Understand the basic operation of each program introduced,
3. Explain how each program is used,
4. Define key terms used in programs,
5. Demonstrate ability to use basic function of the programs covered,
6. Extract any type of dataset and convert to an analytical format

Course Scope and Content (Lecture):

- Unit I Data Types and Organization
- A. Recognizing Data Types – Static, Dynamic, Calculated
 - B. Recognizing data structure and data format
 - C. Formatting different and multiple datasets

- D. Learning how to import any data set and format it for data analysis
 - E. Learn how to merge/link datasets for analysis
 - F. Analytical Case Studies
- Unit II Oilfield Manager Mapping Applications (OFM)
- A. Oilfield Manager Mapping Applications Introduction
 - B. Mapping Datasets
 - C. Applications:
 - 1. Maps - Bubble, Grid, Contour, Surface, Scatter
 - 2. Graphing – Production Curves, Summary/Group curves
 - 3. Reports
 - 4. Forecasting
 - D. Analytical Case Studies
- Unit III Petroleum Economic Evaluation Program (PEEP)
- A. Getting to Know PEEP
 - B. Entering Well Data
 - C. Forecasting on Well Data
 - D. Forecasting Cash Flow Based on the Economic Case
 - E. PEEP Reports
 - F. Analytical Case Studies
- Unit IV “Geo” Data and Geo Database Programs
- A. GeoGraphix
 - 1. Creating a project
 - 2. Importing project well data
 - 3. Brief overview of other tools
 - B. Analytical case Studies
- Unit V Geomodeling and Geospatial Programs (Petrel and ArcGIS)
- A. Petrel basics
 - B. How to build a project
 - C. Difference from Geodatabase program
 - D. GIS
 - E. Arc GIS Overview
 - F. Project interface basics
- Unit VI Troubleshooting and Problem Solving
- A. Other General Data Management Resources Used in the Industry
 - B. Troubleshooting and Problem Solving
 - C. Analytical Case Studies

Course Scope and Content (Laboratory):

- Unit I Data Types and Organization
- A. Formatting different and multiple datasets
 - B. Application on how to import a data set and format it for data analysis
 - C. Application and practice on how to merge/link datasets for analysis

- Unit II Oilfield Manager Mapping Applications (OFM)
 - A. Oilfield Manager Mapping Applications
 - B. Mapping Datasets
 - C. Applications
 - 1. Maps - Bubble, Grid, Contour, Surface, Scatter
 - 2. Graphing – Production Curves, Summary/Group curves
 - 3. Reports
 - 4. Forecasting

- Unit III Petroleum Economic Evaluation Program (PEEP)
 - A. Entering Well Data
 - B. Forecasting on Well Data
 - C. Forecasting Cash Flow Based on the Economic Case
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- Unit IV “Geo” Data and Geo Database programs
 - A. GeoGraphix
 - 1. Creating a project
 - 2. Importing project well data

- Unit V Geomodeling and Geospatial Programs (Petrel and ArcGIS)
 - A. How to build a project
 - B. GIS
 - C. Project interface basics

- Unit VI Troubleshooting and Problem Solving
 - A. Troubleshooting and Problem Solving application and practice

Learning Activities Required Outside of Class:

The students in this class will spend a minimum of 2 hours per week outside of the regular class time doing the following:

1. Reading required materials and other background materials for class
2. Answering questions
3. Studying class materials and notes
4. Researching
5. Problem solving activities and exercises

Methods of Instruction:

1. Lecture and discussion
2. Analytical activities
3. Group activities
4. Lab Activities

Methods of Evaluation:

1. Written assignments, including:

- a. Analytical solutions
 - b. Read and generate models using programs covered in class
 - c. Demonstrated ability to use application (i.e. OFM, PEEP, Geo Data, Petrel, etc) through satisfactory completion of lab activities
2. Exams and quizzes
- a. Analytical solutions quizzes
 - b. Multiple choice, true/false
3. Participation
- a. Group activities
 - b. Class discussion
 - c. Class attendance