

pp-4/6/11

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

Depository Account

(include title)

1. SYLLABUS OF RECORD

I. Course Prerequisites

GEOS 324 Geology of Oil and Gas

3c-3l-4cr

Prerequisites: Grade of C or better in GEOS 202 and 203

An in-depth exploration of the geological processes that create oil and gas resources in sedimentary rocks. Students will also learn specific techniques used in the oil and gas industry for locating and extracting oil and gas reserves, and study the environmental impacts caused by their development. Students will also gain an understanding of the limited nature of fossil fuels.

II. Course Objectives

At the end of this course students will be able to:

1. Identify the rock formations that are the sources of hydrocarbons and the reservoir rocks that are most likely to contain exploitable resources.
2. Interpret organic geochemical data to correlate petroleum fluids from source rock to reservoir
3. Explain what geological factors must be present to create a structural or stratigraphic trap for hydrocarbons.
4. Synthesize data from well logs and seismic surveys to contour strata and identify facies
5. Select appropriate drilling and fracturing techniques to use in different geologic settings
6. Predict possible environmental costs and limitations on hydrocarbon extraction, and choose

appropriate methods to mitigate environmental damage.

III. Detailed Course Outline

Lecture Topic (3 academic hours per week except as noted)	Lab Topic (3 acad. hrs)
---	-------------------------

Week 4, Sedimentation & facies interpretation

- Sedimentary environments & biogenic productivity
- Well-log analysis and interpretation
- Subsurface facies reconstruction

Week 5 Well-log analysis and

correlations of strata.

Subsurface facies

Week of source rock formation

Week of source rock formation

Gas generation and migration

Timing of oil and

Generation of Oil & Gas (2 hours)

Week 6 Migration

Structural versus stratigraphic traps

Structural



IV. Evaluation Methods

Each component of the course will contribute to final grade as follows:

Weekly Lab Exercises	20%
Midterm Exam	20%
Final Project	30%
<u>Final Exam</u>	<u>30%</u>
Total	100%

V. Grading Scale

The final grade for this course will be determined using the following schedule:

A=90-100%; B=80-89%, C=70-79%, D=60-69%, F=<60%

VI. Attendance Policy

The attendance policy will conform to IUP's undergraduate course attendance policy.

VII. Course Textbook and Other Resources

The main textbook used in this course will be *Elements of Petroleum Geology (2nd Edition)* by
Richard C. Selley (Ed., 1997). This textbook is available in the library.

Selected Journal Articles

Aboukimer, Youness. Mink-Tan, San Heung. L. Alberta, Ontario and France. L.H.L. (2010)

Resonance Field Measurement (RFL) 10. 10. 1. 10. 10. 1. 10. 1. 10. 1. 10. 1.

A2. Does this course require changes in the content of existing courses or requirements for a program? If catalog descriptions of other courses or department programs

must be changed as a result of the adoption of this course, please submit as separate

proposals all other changes in courses and/or program requirements.

A separate proposal for the Energy Resources track, which requires this new course is

B4. Will seats in this course be made available to students in the School of Continuing Education? No.

Section C: Implementation

C1. Are faculty resources adequate? If you are not requesting or have not been authorized to hire additional faculty, demonstrate how this course will fit into the

sections to make this possible? Please specify how preparation and equated

workload will be assigned for this course.

We have been authorized to hire a specialist in petroleum exploration and resource

Section D: Miscellaneous

Include any additional information valuable to those reviewing this new course proposal.

Play, estimated by some to be the largest natural gas reserve in the world) has created a booming industry in Pennsylvania as well as adjacent states. This class, and the new Energy Resources Track it is part of, are being proposed in order to meet the growing demand for trained geologists by companies expanding their operations in Pennsylvania. By adding this specialized training to the classic field training that the IUP Geoscience Department is well known for among local oil and gas companies, IUP underscores