

TEXAS A&M UNIVERSITY – CORPUS CHRISTI  
COLLEGE OF SCIENCE AND TECHNOLOGY

GEOLOGY 4436 –Introduction to Petroleum Geology  
SPRING SEMESTER 2009

Dr. James R. Garrison, Jr.

Email: [james.garrison@tamucc.edu](mailto:james.garrison@tamucc.edu)

### Course Description

This class is intended for upper division-level geology majors and environmental science majors, who would like a better understanding of the basic principles of petroleum geology. The course will address the concepts of petroleum geology and the techniques used in the exploration and production of hydrocarbon systems. The class will consist of 3 hours of lectures each week and 2 hours of laboratory exercises each week. Lectures will cover the basic principles of stratigraphy, sedimentology, hydrocarbon generation, hydrocarbon-trapping mechanisms, reservoir characterization, seismic interpretation, well-log interpretation, and geologic risk analysis.

Prerequisites: Physical Geology (or equivalent), Sedimentation and Stratigraphy (or equivalent) or permission of the instructor.

### Course Goals and Objectives

Upon completion of this course, the participant should:

- (1) understand the basic principles of petroleum systems,
- (2) understand the facies concept of deposition systems,
- (3) understand the basic concepts of hydrocarbon traps.
- (4) understand the concepts of seismic stratigraphy and seismic interpretation.
- (5) understand the factors controlling risk in hydrocarbon exploration and production.
- (6) be able to interpret geological data sets
- (7) understand the basics of well-log analysis
- (8) understand the basic principles of developing a hydrocarbon prospect
- (9) understand the basic principles of economics in drilling for hydrocarbons
- (10) understand the basics of drilling and well completion

### Evaluation and Grade Assignment

Grades will be based on:

- A) A series of three examinations will be given during the course (60% of grade).
- B) Evaluation of laboratory exercises (40% of grade)

### Class Policies

Attendance of all class days and the laboratory sessions is mandatory. While group discussion and collaboration is encouraged during the laboratory exercises, unless work is explicitly

specified to be a team project, the work you hand in is expected to be yours. Please note that alcohol and drug policies are strictly enforced. Violations will result in immediate expulsion and a failing grade.

Textbook:

Principles of Petroleum Development Geology IBSN: 0-13-649468-4

Author: Robert C. Laudon

Supplies:

Pencils, 6 inch ruler (cm), hand lens, colored pencils, grain size comparator, calculator

**Lecture Topics**

Fluvial Depositional Systems

Deltaic and Associated Shoreline Depositional Systems

Deepwater Depositional Systems

Depositional Sequence Stratigraphy

Generation of Hydrocarbons and Hydrocarbon Migration

Hydrocarbon Structural Trapping Mechanisms

Hydrocarbon Stratigraphic Trapping Mechanisms

Basics of Reflection Seismic Analysis I

Basics of Reflection Seismic Analysis II

Basics of Reflection Seismic Analysis III

Basics of Well-log Analysis I

Basics of Well-log Analysis II

Fundamentals of Constructing Geologic Cross-sections

Fundamentals of Drilling and Well Completions

Basic Core Description and Analysis

Geological Risk Analysis

Economics of Hydrocarbon Exploration and Production