

Petroleum Geology

Earth Sciences 420

Section: D100

Term: 2008 Spring

Instructor: Dr. S.E. Dashtgard

Discussion Topics: General

EASC 420 is a practical course that covers all aspects of petroleum geology: from oil generation and migration to exploration and development. The focus will be on a geologist's role in the petroleum industry and on the types of tools and information geologists use to explore for and develop hydrocarbons. Material covered includes: source rock deposition and maturation, migration pathways, hydrocarbon trapping mechanisms, well log interpretation, DST interpretation, secondary and tertiary recovery strategies, and unconventional hydrocarbon resources. Examples will mainly be drawn from the Western Canada Sedimentary Basin. Laboratory exercises will demonstrate classroom concepts and will introduce students to software commonly used in the petroleum industry.

Course Topics:

1. Introduction to petroleum geology and a brief history of the industry. Summary of the fundamental elements of the hydrocarbon system.
2. Source rock types, deposition, and hydrocarbon generation.
3. Hydrocarbon migration pathways and trapping mechanisms.
4. Tools used in petroleum exploration: seismic, core, facies models, and sequence stratigraphy.
5. Well-log interpretation. How well logs are used to discover oil and gas and the weaknesses and strength of each tool.
6. Drill stem test (DST) interpretation.
7. Mapping techniques and contouring.
8. Land surveys, land sales, royalties, and basic economics.
9. Secondary (waterflood) and tertiary (CO₂) enhanced oil recovery strategies.
10. Unconventional play types-oil sands, coal-bed methane, shale gas, and thermo-electric.

Course Organization:

Petroleum Geology

One 2-hour lecture classes and one 3-hour laboratory class per week.

Grading: 1. Laboratory Assignments: 40%

2. Report and Presentation: 20%

3. In-class quizzes: 10%

4. Final Theory Exam: 30%

Required Texts: Gulyas & Swarbrick, Petroleum Geoscience, 2003, Blackwell.

Recommended Texts:

Materials/Supplies:

Prerequisite/Corequisite: EASC 207, EASC 302, EASC 304, EASC 309, or permission of the instructor

Notes:

This outline is derived from a course outline repository database that was maintained by SFU Student Services and the University's IT Services Department. The database was retired in 2014 and the data migrated to SFU Archives in 2015.