GEOL 399/745 – Petroleum Geology

Spring 2016

This course is for graduate and upper level undergraduate students interested in the principles of prospective basin evaluation for oil and natural gas. (3 credit hours)

Instructor: James Kellogg
Note: Register before December 13, 2015 if you would like to be considered for the IBA team
EWSC 201, Tuesday 2:50 – 5:40 pm

Goals and Content of Course: This course provides a hands-on introduction to the principles of prospective basin evaluation for oil and natural gas. All students in the class will analyze a real geological and geophysical dataset using state of the art technology and present their results as teams. The dataset will be provided by the annual international Imperial Barrel Award competition sponsored by the American Association of Petroleum Geologists. Topics covered will include an introduction to petroleum exploration, elements of a petroleum system, seismic interpretation, formation evaluation, play identification, and prospect evaluation and risk assessment. The course will also present an overview of worldwide energy resources and an introduction to the principals of shale natural gas exploration and production that is revolutionizing the US energy industry.
Learning Outcomes:

- understand the elements of a petroleum system
- learn the basics of prospective basin evaluation and presentation
- be introduced to formation, play, and prospect evaluation
- learn the basics of worldwide energy resources, including shale gas
- have a command of various software tools used in manipulating and analyzing geophysical and geological data
- develop the ability to integrate diverse datasets to understand subsurface geology

Course Topics:

- introduction to petroleum exploration,
- elements of a petroleum system
- Source rocks
- Reservoir/Traps
- seismic interpretation
- formation evaluation
- play identification
- prospect evaluation and risk assessment.
- Shale natural gas
- Worldwide energy resources
- Outer continental shelf exploration


Software Packages: Landmark, Kingdom Suite, HampsonRussell, Petrel

Assessment: class presentations on IBA topics (50%), peer assessment of group efforts (25%), written summary of project (25%). Graduate students will be required to submit an additional final report.

Course Schedule: There will be 3 hours of lecture and supervised laboratory per week. The laboratory exercises will be focused on the interpretation and analysis of the dataset provided through the Imperial Barrel Award competition, supplemented by lectures and discussions on selected topics. Five class members will compete at the annual IBA competition. Eastern Section IBA Dates: December 15, 2015 – IBA application forms are due to AAPG with list of team members, February 12, 2016 - distribution of IBA dataset for Eastern Section, April 8 – 9, 2016 - AAPG Eastern Section IBA competition - Pittsburgh, PA