

Fall 2014 PTE 503 Fall 2014 PTE 503 Technology of Unconventional Oil and Gas resources Development
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Mork Family Dept of Chemical Engr. and Materials Science
University of Southern California Los Angeles
Class Hours: 5:00-7:40 PM Tuesdays

26-Aug First class will be on Sept 2nd.

- 2-Sep Introduction- global Impact-technology issues; technical, economic, political, and environmental constraints on development; geographical distribution of shale resources; basin and petroleum System modeling
9-Sep Physical and Chemical Properties; kerogen; Resource assessment ; hydrocarbon origin; migration; entrapment; maturation process; petroleum geochemistry and geology; RockEval pyrolysis
16-Sep Fracture Importance in unconventional reservoirs ; in-situ stress , origin, occurrence; prediction; mechanics in structural geology; compaction process
- 23-Sep Nano scale pore systems; Permeability coefficients; gas diffusion coefficients; capillary sealing efficiency (Gas breakthrough experiments); mechanical properties of rocks, hydraulic fracturing
30-Sep Petrophysics of shale reservoirs (Dr. Jessen)
7-Oct mid term exam
14-Oct Term projects by Student Teams
21-Oct Occurrences, resources, reservoir characteristics; petroleum source rocks
28-Oct Drilling and completion methods; frac design ; proppants; tracer tests
4-Nov Seismic monitoring and induced seismicity
11-Nov Case studies; shale and other unconventional plays; lessons learned
18-Nov Facilities, reservoir management, limitations on development
25-Nov Production forecasting and economics
2-Dec Coalbed; tar sands; methane hydrates
9-Dec Final Exam 430 -630 pm

Grading: Letter Grade

Homework (20%), Midterm (35%), Final (35%) Term Project 10%

Statement for Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Statement on Academic Integrity

USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one's own academic work from misuse by others as well as to avoid using another's work as one's own. All students are expected to understand and abide by these principles. *Scampus*, the Student Guidebook, contains the Student Conduct Code in Section 11.00, while the recommended sanctions are located in Appendix A: <http://www.usc.edu/dept/publications/SCAMPUS/gov/>. Students will be referred to the Office of Student Judicial Affairs and Community Standards for further review, should there be any suspicion of academic dishonesty. The Review process can be found at: <http://www.usc.edu/student-affairs/SJACS>

