Course Number: PNGE 632
Course Title: Reservoir Simulation & Modelling – Part Two: Practical Applications (History Matching and Field Development Planning)
Instructor: Shahab Mohaghegh, Ph.D.
Semester: Fall
Prerequisites: Reservoir Engineering or consent
None Required, Hand Outs are provided. Notes given during the course.
"Petroleum Reservoir Simulation," Aziz, Settari.
Course Content: Application of finite-difference equations to multi-phase fluid flow in porous media in two or three dimensions with gravity and capillary pressure effects. Practical applications in the oil and gas industry. Introduction to how to build a numerical reservoir model using a commercial reservoir simulator. Practicing reservoir modeling and simulation tasks such as sensitivity analysis, history matching, optimization and uncertainty assessment.
Approx. Test Date: Midterm Exam, Second Week of March
Final, Week of Finals
Projects: One major, full semester long project using commercial numerical reservoir simulation. The project includes oral presentation and comprehensive report.
Grading Policy:  
Homework  25%  
Projects  75%  

On-Time attendance is absolutely required

Course Content

- Practical Applications of Numerical Reservoir Simulation
  - History Matching
  - Reservoir management
    - Field Development Planning
      - Short-Term, Mid-Term, and Long-Term Planning
    - Uncertainty Quantification
- Introduction to Commercial Numerical Reservoir Simulation Models
- How to build a practical Reservoir Simulation Model using Commercial Tools
- Performing History Matching using Commercial Simulators
- Performing Field Development Planning using Commercial Simulators

INSTITUTIONAL POLICIES: Students are responsible for reviewing Policies on:   
Inclusivity, Academic Integrity, Incompletes, Sale of Course Materials, Sexual Misconduct, Adverse Weather, Student Evaluation of Instruction, and Days of Special Concern/Religious Holiday Statements.