PNGE 633 – Advanced Secondary Recovery

Class schedule
Lecture: 2 sessions per week, 75 minutes per session

Instructor: Dr. Ali Takbiri, 333D Mineral Resources Building, 304-293-3973, altakbiri@mail.wvu.edu
Office Hours: Wednesday 2:00-4:00 p.m. or by appointment

Reference Books:
2. Selected papers from SPEJ, JPT, JCPT, etc

Simulation:
There will be class homework and a final project that requires the use of a reservoir simulator. Training sessions and tutorial material will be offered.

Software:
CMG

Computer Programming:
Some of the homework and assignments will involve computer programming using MATLAB/Python.

Course Learning Outcomes:
This course is an overview of enhanced oil recovery methods including waterflooding, thermal, miscible gas, and chemical flood methods. Emphasis is on process mechanisms and reservoir engineering aspects of applications
Fundamentals and theory of enhanced oil recovery; polymer flooding, surfactant flooding, miscible gas flooding and steam flooding; application of fractional flow theory; strategies and displacement performance calculations.
This course will provide a scientific and technological foundation designed to provide answers to questions important to those interested in investigating the potential of secondary recovery techniques in enhanced energy production as well as to policy makers.
The course will provide the students with the methodology and the tools to evaluate and quantify the potential, uncertainties and risks involved in EOR. Safety, economic, and environmental and legal aspects will also be covered.

Topics covered:
- EOR Introduction, Immiscible Displacement Fundamentals, Waterflooding
- Waterflooding
- Steam Injection Methods Fundamentals, Steam Stimulation
- Steam Flooding
- Miscible Gas Fundamentals
- Hydrocarbon Miscible and CO2 Flooding
- Polymer Waterflooding and Surfactant Flood

Grading Policy:
- Term Paper, 25%
- Final Exam, 25%
- Quizzes and Homework, 25%
- Final Project, 25%

Homework should be given to me before the due date! If there is any emergency (such as bad weather condition), electronic version of the homework should be emailed to me.
Grade Assignment:
100 – 90 A
89 – 80 B
79 – 70 C
69 – 60 D
59 – 0 F

Attendance Policy:
Attendance is mandatory. Consistent with WVU guidelines, students absent from regularly scheduled classes because of authorized University activities will have the opportunity to take them at an alternate time. Make-up exams for absences due to any other reason will be at the discretion of the instructor.

Social Justice Statement:
“West Virginia University is committed to social justice. I concur with that commitment and expect to maintain a positive learning environment based upon open communication, mutual respect, and nondiscrimination. Our University does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color or national origin. Any suggestions as to how to further such a positive and open environment in this class will be appreciated and given serious consideration.

If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class. Please advise me and make appropriate arrangement with Disability Services (293-6700).”

Academic Integrity:
The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the Student Conduct Code https://studentconduct.wvu.edu/. Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see me before the assignment is due to discuss the matter.