

**PNGE 434**  
**APPLIED PETROLEUM RESERVOIR ENGINEERING**

**Catalog Description:** Application of reservoir engineering data to calculation of recovery potentials and to analysis, simulation, and prediction of reservoir performance under a variety of production methods to effect maximum conservation

**Pre-requisites**

1. MATH 261: Partial Diff. Equ.
2. PNGE 333: Basic Reservoir Engineering
3. STAT 215 or IE 213 (or Concurrent)

**Course Objectives**

1. Analyze well test data to characterize the reservoir.
2. Analyze reservoir data to predict reservoir behavior.
3. Apply reservoir engineering knowledge to predict the recovery.
4. Apply design principles to optimize the recovery.
5. Effectively communicate the results of the analysis.
6. Recognize the need to acquire the knowledge of contemporary issues.

**Semester:** Fall 2012

**Instructor:** Kashy Aminian, 345-F Mineral Resources Building  
293-3964, [Khaminian@mix.wvu.edu](mailto:Khaminian@mix.wvu.edu)

**Office Hours:** Monday- Wednesday-Friday 9:30-11:30 AM

**Schedule:** Tuesday and Thursday 9:30-10:45 AM

**Location:** Room 102 Engineering Science Building

**Textbook:** An Electronic Copy of the Course Notes is available on eCampus.

**References**

1. Dake: Fundamentals of Reservoir Engineering, Elsevier, 1978
2. Lee: Applied Well Test Interpretation, SPE, 2013
3. Dake: Practice of Reservoir Engineering, Elsevier, 1978
4. Smith, Tracy & Farrar: Applied Reservoir Engineering, OGCI, 1992
5. Willhite: Water flooding, SPE 1986
6. Slider: Worldwide Practical Reservoir Engineering Methods, PennWell, 1983

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**Course Schedule:**

Week 1:	<i>Application of Statistical Methods in Reservoir Engineering</i>
Week 2:	<i>Theory of Fluid Flow in Porous Media</i>
Week 3:	<i>Fundamentals of Primary Recovery</i>
Week 4:	<i>Gas Drive Reservoir Performance Prediction</i>
Week 5:	<i>Water Drive Reservoir Performance Prediction</i>
Week 6:	<i>Fundamentals of Secondary Recovery</i>
Week 7:	<i>Waterflood Design and Behavior</i>
Week 8:	<i>Waterflooding Performance Prediction</i>
Week 9:	<i>Fundamentals of the Pressure Transient Test Analysis</i>
Week 10:	<i>Analysis of the Pressure Transient Test Data</i>
Week 11:	<i>Analysis of the Pressure Data from of Hydraulically Fractured Wells</i>
Week 12:	<i>Analysis of the Pressure Transient Data from Horizontal Wells</i>

**Grading**

- *Quizzes& Special Assignments*            25%
- *Homeworks*                                    25%
- *Project*                                         25%
- *Exams*                                         25%

**Grading Scale: A: 86-100, B: 76-85, C: 66-75, D: 55-65**

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**Attendance Policy**

- *Class attendance is mandatory unless excused in advance or in the case of a documented legitimate emergency.*
- *Students who are absent from class for any reason are responsible for all missed work.*
- *Students who miss a quiz or an exam will not be permitted to make it up.*
- *Make-up exam will be given only when there is an excused absence.*

**Days of Special Concern:**

- *WVU recognizes the diversity of its students and the needs of those who wish to be absent from class to participate in Days of Special Concern, which are listed in the schedule of courses.*
- *Students should notify their instructors by the end of the second week of classes regarding Day of Special Concern observances that will affect their attendance.*
- *Reasonable accommodation will be made for missed Quizzes or Exams as a result of observing a Day of Special Concern.*

**Classroom Conduct:**

- *You are expected to conduct yourself in a professional manner while in this class.*
- *Be on time. Do not enter the classroom after the class has started.*
- *Attend to any personal needs (drink, restroom, phone calls, etc.) prior to class time.*
- *Do not return to class if you have to leave the class for any reason.*
- *While in the class, everyone is expected to remove their hats and sunglasses, put away the newspaper, refrain from eating and drinking, and turn off cell phones.*
- *Bring your notes, paper, and a calculator to class.*
- *Please do not force the instructor to remind you that you should behave in a professional manner.*

**Course Policies:**

- *Homeworks must be submitted at the beginning of the class on the due date.*
- *Homeworks submitted in the office, via email, or placed in the mail box are not accepted.*
- *Late homeworks will not be accepted.*
- *In case of an excused absence, the homework must be submitted prior to the due date.*

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***WVU Social Justice Statement***

***The West Virginia University is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion.***

***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 arrangements with the Office of Accessibility Services (304-293-6700). For more information on West Virginia University's Diversity, Equity, and Inclusion initiatives, please see***

***WVU Academic Integrity Statement***

***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 at <http://studentlife.wvu.edu/studentconductcode.html>.***

***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.***

**Emergencies:**

***In the case of an emergency such as fire alarm, please evacuate the building and gather at least 100 yards away from the building. DO NOT return to the building until the emergency is over and it is cleared by the fire marshal or police.***