

PNGE 333
BASIC RESERVOIR ENGINEERING

Catalog Description: *Basic properties of petroleum reservoir rocks, Fluid flow through porous materials, Evaluation of oil and gas reserves*

Pre-requisites:

1. PHYS 112: General Physics
2. MAE 331: Fluid Mechanics

Course Objective

To apply the basic reservoir engineering methods to solve reservoir engineering problems

Course Learning Outcomes:

1. *To interpret data from various sources for determining representative reservoir parameters.*
2. *To integrate the results of data analysis from various sources to estimate the resources and reserves.*
3. *To communicate the results of the analysis effectively.*

Semester: Spring 2015

Instructor: Kashy Aminian, 345-F Mineral Resources Building
304-293-3964, Khaminian@mix.wvu.edu

Office Hours: Monday through Friday 10:00 AM-12:00 PM

Schedule: Monday 5:00-6:15 PM and Thursday 5:30-6:45

Location: Room 113 Mineral Resources Building

Textbook: *An Electronic Copy of the Course Notes will be posted on eCampus.*

References

L.P. Dake: *Fundamentals of Reservoir Engineering*, Elsevier, 1978.

Towler: *Fundamental Principles of Reservoir Engineering*, SPE, 2007.

Amyx, Bass, and Whiting: *Petroleum Reservoir Engineering*, McGraw-Hill, 1960.

Tiab and Donaldson: *Petrophysics*, Gulf Publishing, 1996.

PNGE 333
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Schedule:

Week 1:	<i>Introduction</i>
Week 2:	<i>Review of Petroleum Fluid Properties</i>
Week 3:	<i>Basic Reservoir Rock Properties- Porosity and Permeability</i>
Week 4:	<i>Rock and Fluid Interactions-Capillary Pressure and Relative Permeability</i>
Week 5:	<i>Reservoir Rock Electrical Properties</i>
Week 6	<i>Estimating Representative Reservoir Parameters by Integration of Core and Well Log analysis Results</i>
Week 7:	<i>Evaluation Oil and Gas Resources by Volumetric Methods</i>
Week 8:	<i>Fundamentals of the Fluid Flow in Porous Media</i>
Week 9:	<i>Well Testing and Analysis of the Well Test Data</i>
Week 10:	<i>Analysis of the Production Data by Material Balance Methods</i>
Week 11:	<i>Analysis of the Production Data by Decline Curve Methods</i>
Week 12:	<i>Reservoir Performance Prediction</i>

Grading

- *Attendance* and Quizzes* 25%
- *Homeworks* 25%
- *Project* 25%
- *Exams (3 in class exams)* 25%

** Every absence will result in deduction of one percentage point.*

Grading Scale:

A: 91-100
B: 76-90
C: 61-75
D: 50-60

PNGE 333
BASIC RESERVOIR ENGINEERING

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.*
- *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.*
- *Late homeworks and homeworks submitted outside the class 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

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 non-discrimination.](#)

Our university does not discriminate on the basis of race, sex, age, disability, veteran status, religion, sexual orientation, color or national origin. Any suggestion as to how to further such a positive 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)**.*

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.