

PNGE 471
Natural Gas Production and Storage Engineering

Catalog Description:

Development of gas and gas condensate reservoirs; design and development of gas storage fields in depleted gas, gas condensate, oil reservoirs, and aquifers; design of natural gas production and processing equipment

Pre-requisites:

PNGE 470: Natural Gas Engineering

Course Objectives:

To solve design problems related to prediction and optimizing of natural gas reservoirs performance and gas storage reservoir.

Semester: Spring 2013

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

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

Schedule: Thursday 6:00-8:50 PM

Location: Room G102 Engineering Science Building

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

References

1. Natural Gas Engineering- Production & Storage, Katz & Lee, McGraw-Hill, 1990.
2. Underground Storage Theory and Practice, M.R. Tek, Gulf Publishing, 1987.
3. Underground Storage of Fluids, Coast & Katz, Ulrich's Books, 1975
4. Gas Reservoir Engineering, Lee and Wattenbarger, SPE Textbook Series, 1996.
5. Managing Water-Drive Gas Reservoirs, GRI, 1993
6. Practical Natural Gas Engineering, R.V. Smith, PennWell Publishing, 1990
7. Handbook of Natural Gas Engineering, Katz et al., McGraw-Hill, 1959.

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Schedule:

Week 1:	<i>Development of the Conventional Gas Reservoirs</i>
Week 2:	<i>Engineering Design Objectives in Gas Field Development</i>
Week 3:	<i>Predicting Performance of Water Drive Gas Reservoirs</i>
Week 4:	<i>Predicting Performance of Gas Condensate Reservoirs</i>
Week 5:	<i>Unconventional Gas Resources</i>
Week 6:	<i>CBM Reservoir Engineering</i>
Week 7:	<i>Shale Gas Reservoirs</i>
Week 8:	<i>Hydraulic Fracturing</i>
Week 9:	<i>Horizontal Wells</i>
Week 10:	<i>Overview of Underground Storage</i>
Week 11:	<i>Engineering Design Objectives in Gas Storage Design</i>
Week 12:	<i>Gas Storage in Depleted Reservoirs</i>
Week 13:	<i>Gas Storage in Aquifers</i>
Week 14:	<i>Operation of the Gas Storage Reservoirs</i>

Grading

- *Attendance* and Homeworks* 20%
- *Exams and Quizzes* 20%
- *Projects* 60%

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

Grading Scale:

A: 91-100
B: 80-90
C: 70-79
D: 55-60

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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

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.