COURSE SYLLABUS
PNGE 770
ADVANCED NATURAL GAS ENGINEERING

COURSE INTRODUCTION
- Credit Hours: 3
- Prerequisite Courses: PNGE 470
- Method of Instruction: Lecture
- Instructor: Kashy Aminian, Ph.D., Professor
- Class Meets: 1 Sessions/week, 150 minutes per Session
- COURSE DESCRIPTION: Application of reservoir modeling, history matching, and type curves techniques to analyze and predict the performance of conventional and unconventional gas reservoirs.

LEARNER SUPPORT
- Instructor Office Location: 325C MRB
- Office Hours: 10-11:50 M-T-W-Th.
- Instructor Email: khaminian@mix.wvu.edu
- Phone: 304.293.3964
- Method of Making Appointment: Email

INSTRUCTIONAL MATERIALS
- REQUIRED INSTRUCTIONAL MATERIALS:
  Electronic copies of the course notes will be posted on eCampus.
- OPTIONAL INSTRUCTIONAL MATERIALS:

COURSE LEARNING OBJECTIVES
- To Solve Engineering Design Problems Related to Development of the Conventional Gas Reservoirs.
- To Predict and Optimize the Performance of the Gas/Condensate and Water Drive Reservoirs.
- To Understand the Performance of the Unconventional Gas Reservoirs.

COURSE ACTIVITIES
1. Properties of Natural Gas
2. Performance Prediction and Optimization of the Conventional Gas Reservoirs
3. Performance Prediction and Optimization of the Water Drive Gas Reservoirs
4. Phase Behavior Prediction and Optimization of the Gas/Condensate Reservoirs
5. Improving Productivity of the Low Permeability Gas Reservoirs by Hydraulic Fracturing and Horizontal Well Applications
6. Performance of the Shale and Coalbed Gas Reservoir


**Assessment**

- **Major Assignments/Assessments:**
  Attendance, Homework, Project, and Exams

- **Grading Criteria:**
  - Attendance is required in the class and the lab.
  - Each absence in the class will result in 10% reduction in Attendance Grade.
  - Homework must be prepared in MS-Word and/or Excel and be submitted on-line.
  - Homework must be prepared by each student separately and must include Homework Number, Name, The Date, Solution Method, and the Results.
  - Two Exams, Mid-term and the Final, will be given. Exam are open-book.

- **Weight of Course Points:**
  Attendance 10%, Homework 20%, Project 40%, and Exams 30%

- **Expected Timeline:**
  One Homework each week (5 before the mid-term)
  Two Projects (One before the mid-term)
  Mid-term Exam: 7th week of Class

- **Response Time and Feedback Plan:**
  Homework Solutions Grade will be posted on eCampus within one week of the due date.
  The Mid-term Exam Grade will be posted on eCampus within one week of the exam.

**Final Grading Scale:** A>90, B: 75-89, C: 61-74, D: 50-60, F<50

**Course and Institutional Policies**

- **Attendance Policy:**
  Attendance is required in the class.
  Each absence in the class will result in 10% reduction in Attendance Score. Students who are absent from the class for any reason are responsible for all missed work.
  No makeup exam will be given for students who are absent during the exams.

- **Late Assignment and Missed Exam Policy:**
  The absence or missed work can be excused for medical reasons (document is necessary).
  Prior approval must be obtained for the absence or the missed work due to non-medical reasons.
  Makeup exam will be given for students with prior approval or for medical reasons.

- **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.**