Course Title: Special Topics – Innovations in Oil and Gas Exploration -24012 CHEG 4103- P24

Department of | Chemical Engineering | College of | Engineering
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Prairie View, TX 77446-0519

Office Hours | T 2:00 – 3:00 P.M.; R 2:00 – 3:00 P.M. & 5:00 – 6:00 p.m.
Virtual Office | By Phone (215-850-1883) and Skype by appointment (appointment must be scheduled via e-mail to emmanuel.dada@ymail.com); skype name: emmanuel.dada1

Course Location: Agriculture and Business Bldg Room 216
Class Meeting Days & Times: T and R 12:30 p.m. to 1:50 p.m.
Catalog Description: The special topics course series presents selected current and emerging topics in chemical engineering depending on need as determined by the department faculty. This particular topic consists of an overview of petroleum industry and petroleum engineering including nature of oil and gas reservoirs, petroleum exploration and drilling, formation evaluation, well completions and production, surface facilities, reservoir mechanics, and improved oil recovery.

Prerequisites: Consent of instructor.
Co-requisites:


NOTE: e-books can not be used during exams.
Access to Learning Resources:

PVAMU Library:
phone: (936) 261-1500;
web: http://www.tamu.edu/pvamu/library/

University Bookstore:
phone: (936) 261-1990;
web: https://www.bkstr.com/Home/10001-10734-1?demoKey=d

Course Goals or Overview:
The goal of this course is to…

Course Outcomes/Objectives
At the end of this course, the student will

1. Be able to describe the exploration and production process, the petroleum engineer’s role, and petroleum engineering terminology.
2. Be able to describe the early history of the petroleum industry, the origins of the major international oil companies, the political tensions extant in the Middle East, and the technological challenge facing the industry in an increasingly environmentally conscious world.
3. Demonstrate the knowledge of oil field vocabulary and demonstrate familiarity with methods and materials used in petroleum engineering.
4. Describe how physical properties of hydrocarbon components are affected by molecular structure, size, pressure, and temperature.
5. Explain the physical meaning and evaluate the impact of fluid properties in reservoir engineering and production problems.
6. Be able to identify and define the components of a drilling rig and to group them into various systems (e.g. rotating, hoisting, circulating, etc.).
7. Understand and use basic project economic evaluation.
8. Derive and use the gas and oil material balances coupled with forecasting.
9. Recognize mechanisms and understand appropriate application situations and advantages of common assisted and enhanced recovery methods.

Course Requirements & Evaluation Methods
This course will utilize the following instruments to determine student grades and proficiency of the learning outcomes for the course. Note: See Program Outcomes in True Outcomes

Exams – written tests designed to measure knowledge of presented course material
Exercises – written assignments (in-class or homework) designed to supplement and reinforce course material
Projects – larger assignments designed to measure ability to apply presented course material
Class Participation – daily attendance and participation in class discussions

Grading Matrix (points distribution is subject to updates at the discretion of the instructor)

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Value (points or percentages)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Homework Assignments</td>
<td>10 percent</td>
<td>10</td>
</tr>
<tr>
<td>In-Class Exercises and Participation</td>
<td>15 percent</td>
<td>15</td>
</tr>
<tr>
<td>Mid Term Exam and/or Project Presentation &amp; Report</td>
<td>20 percent</td>
<td>20</td>
</tr>
<tr>
<td>Projects</td>
<td>20 percent</td>
<td>20</td>
</tr>
<tr>
<td>Final Exam and/or Project Presentation &amp; Report</td>
<td>35 percent</td>
<td>25</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>100 percent</strong></td>
<td><strong>100</strong></td>
</tr>
<tr>
<td><strong>Low Class Participation/ Discussion</strong></td>
<td><strong>–10 percent</strong></td>
<td><strong>–10</strong></td>
</tr>
<tr>
<td><strong>Extra Credit</strong></td>
<td><strong>–</strong></td>
<td><strong>–</strong></td>
</tr>
</tbody>
</table>

*Extra credit may be assigned by instructor as optional but available to all

Grade Determination:
A = 100 – 90%,
B = 80 – 89%;  
C = 70 – 79%;  
D = 60 – 69%  
F = 59% or below

Course Procedures

Submission of Assignments:  
*Assignments that are submitted late shall not be accepted.*

Formatting Documents:  
Microsoft Word is the standard word processing tool used at PVAMU. If you’re using other word processors, be sure to use the “save as” tool and save the document in either the Microsoft Word, Rich-Text, or plain text format.

Exam Policy  
Exams should be taken as scheduled. No makeup examinations will be allowed except under documented emergencies (See Student Handbook).

Professional Organizations and Journals  
*Journal of Petroleum Technology (JPT)*

References  
*To be provided by instructor*

16 WEEK CALENDAR (Subject to changes by the Instructor.)

- **Week One**: Topic  
  Course overview. Basic petroleum geology.
  
- **Week Two**: Topic  
  Reservoir fluid and rock properties. Fundamentals of reservoir fluid flow.
  
- **Week Three**: Topic  
  Oil and gas reservoir classification, definition, delineation and development.
  
- **Week Four**: Topic  
  Exploration Operations.
  
- **Week Five**: Topic  
  Drilling fundamentals
  
- **Week Six**: Topic  
  Well completion, stimulation and workover
  
- **Week Seven**: Topic  
  Reservoir properties and evaluation
  
- **Week Eight**: Topic  
  Reservoir Engineering.
  
- **Mid-Term Exam and/or Project Presentations & Reports** (at the discretion of the instructor.)
  
- **Week Nine**: Topic  
  Production Engineering.
Chapter (s): Assignment (s): 
**Week Ten:** Topic Production Engineering.
Chapter (s): Assignment (s): 
**Week Eleven:** Petroleum Economic Evaluation.
Chapter (s): Assignment (s): 
**Week Twelve:** Surface Operations.
Chapter (s): Assignment (s): 
**Week Thirteen:** Enhanced oil recovery mechanisms.
Chapter (s): Assignment (s): 
**Week Fourteen:** EOR, sustainable operations.
Chapter (s): Assignment (s): 
**Week Fifteen:** Sustainable operations.
Chapter (s): Assignment (s): 

**Week Sixteen**

**Final Exam and/or Final Projects Presentations & Reports (At the discretion of the instructor.)**

**Program Outcomes Measured by Course** Program ABET outcomes (g), (h) and (j) assessed using course assignments.
Data Used to Show
Student Proficiency in Measured Program Outcomes

1. Samples of student work in a Binder
2. Spreadsheet showing student performance and class average
3. End of Semester Course Assessment report

University Rules and Procedures

Disability statement (See Student Handbook):
Students with disabilities, including learning disabilities, who wish to request accommodations in class should register with the Services for Students with Disabilities (SSD) early in the semester so that appropriate arrangements may be made. In accordance with federal laws, a student requesting special accommodations must provide documentation of their disability to the SSD coordinator.

Academic misconduct (See Student Handbook):
You are expected to practice academic honesty in every aspect of this course and all other courses. Make sure you are familiar with your Student Handbook, especially the section on academic misconduct. Students who engage in academic misconduct are subject to university disciplinary procedures.

Forms of academic dishonesty:
1. Cheating: deception in which a student misrepresents that he/she has mastered information on an academic exercise that he/she has not mastered; giving or receiving aid unauthorized by the instructor on assignments or examinations.

2. Academic misconduct: tampering with grades or taking part in obtaining or distributing any part of a scheduled test.

3. Fabrication: use of invented information or falsified research.

4. Plagiarism: unacknowledged quotation and/or paraphrase of someone else’s words, ideas, or data as one’s own in work submitted for credit. Failure to identify information or essays from the Internet and submitting them as one’s own work also constitutes plagiarism.

Nonacademic misconduct (See Student Handbook)
The university respects the rights of instructors to teach and students to learn. Maintenance of these rights requires campus conditions that do not impede their exercise. Campus behavior that interferes with either (1) the instructor’s ability to conduct the class, (2) the inability of other students to profit from the instructional program, or (3) campus behavior that interferes with the rights of others will not be tolerated. An individual engaging in such disruptive behavior may be subject to disciplinary action. Such incidents will be adjudicated by the Dean of Students under nonacademic procedures.

Sexual misconduct (See Student Handbook):
Sexual harassment of students and employers at Prairie View A&M University is unacceptable and will not be tolerated. Any member of the university community violating this policy will be subject to disciplinary action.

Attendance Policy:
Prairie View A&M University requires regular class attendance. Excessive absences will result in lowered grades. Excessive absenteeism, whether excused or unexcused, may result in a student’s course grade being reduced or in assignment of a grade of “F”. Absences are accumulated beginning with the first day of class.

Student Academic Appeals Process
Authority and responsibility for assigning grades to students rests with the faculty. However, in those instances where students believe that miscommunication, errors, or unfairness of any kind may have adversely affected the instructor's assessment of their academic performance, the student has a right to appeal by the procedure listed in
the Undergraduate Catalog and by doing so within thirty days of receiving the grade or experiencing any other problematic academic event that prompted the complaint.

Technical Considerations for Online and Web-Assist Courses

Minimum Hardware and Software Requirements:
- Pentium with Windows XP or PowerMac with OS 9
- 56K modem or network access
- Internet provider with SLIP or PPP
- 8X or greater CD-ROM
- 64MB RAM
- Hard drive with 40MB available space
- 15” monitor, 800x600, color or 16 bit
- Sound card w/speakers
- Microphone and recording software
- Keyboard & mouse
- Netscape Communicator ver. 4.61 or Microsoft Internet Explorer ver. 5.0 /plug-ins
- Participants should have a basic proficiency of the following computer skills:
  · Sending and receiving email
  · A working knowledge of the Internet
  · Proficiency in Microsoft Word
  · Proficiency in the Acrobat PDF Reader
  · Basic knowledge of Windows or Mac O.S.

Conduct:
1. Students will conduct themselves in a manner that is respectful to their fellow classmates and the instructor at all times.
2. Cell phones, ipads and smart phones or similar electronic devices MUST be turned off and stowed away during class time. Students are NOT allowed to leave class to answer cell phones or use these devices except for an emergency with the permission of the instructor.
3. Students caught using ipads and smart phones or similar electronic devices during exams will receive ZERO for the exam and be subject to sanctions as stipulated under Academic Misconduct.
4. Students should be prepared to stay in the classroom for the duration of the exam. Students who have any condition that may require them to leave the exam room should make prior arrangements with the Instructor. Students who decide to leave the exam room for any other reason must handover their exam paper and consider the exam over for them.
5. Programmable calculators are NOT allowed in class.
6. Students should dress professionally and are NOT allowed to wear caps/hats in class.
7. Students are NOT allowed to bring food to the classroom or eat in class.
8. Arrive to class prepared to discuss lesson with your project binder.
9. eBooks and/or Internet access are not allowed during class exams.

Class Etiquette and Netiquette (online etiquette): students are expected to participate in all discussions and virtual classroom chats when directed to do so. Students are to be respectful and courteous to others in the discussions. Foul or abusive language will not be tolerated. When referring to information from books, websites or articles, please use APA standards to reference sources. Use of cell phone and Internet connections are not allowed except with the permission of the instructor. Proper dressing is required.

Technical Support: Students should call the Prairie View A&M University Helpdesk at 936-261-2525 for technical issues with accessing your online course. The helpdesk is available 24 hours a day/7 days a week. For other technical questions regarding your online course, call the Office of Distance Learning at 936-261-3290 or 936-261-3282.

Communication Expectations and Standards:
All emails or discussion postings will receive a response from the instructor within 48 hours.
You can send email anytime that is convenient to you, but I check my email messages continuously during the day throughout the work-week (Monday through Friday). I will respond to email messages during the work-week by the close of business (5:00 pm) on the day following my receipt of them. Emails that I receive on Friday will be responded to by the close of business on the following Monday.

**Submission of Assignments:**
Assignments, Papers, Exercises, and Projects will be distributed and submitted through your online course, in-class and/or by e-mail. Directions for accessing your online course will be provided. Additional assistance can be obtained from the Office of Distance Learning.

**Discussion Requirement:**
Because this is an online course, there will be no required face to face meetings on campus. However, we will participate in conversations about the readings, lectures, materials, and other aspects of the course in a true seminar fashion. We will accomplish this by use of the discussion board.

Students are required to log-on to the course website often to participate in discussion. It is strongly advised that you check the discussion area daily to keep abreast of discussions. When a topic is posted, everyone is required to participate. The exact use of discussion will be determined by the instructor.

It is strongly suggested that students type their discussion postings in a word processing application and save it to their PC or a removable drive before posting to the discussion board. This is important for two reasons: 1) If for some reason your discussion responses are lost in your online course, you will have another copy; 2) Grammatical errors can be greatly minimized by the use of the spell-and-grammar check functions in word processing applications. Once the post(s) have been typed and corrected in the word processing application, it should be copied and pasted to the discussion board.