PTE 465: Drilling Technology and Subsurface Methods Syllabus

Fall 2014

If you decide to drop the class MAKE sure that you do so properly…

University Course Catalog has the following course description: Theory and practice in drilling technology; mechanical properties of reservoir rocks; well completion; perforating, acidizing and fracturing. The course is an overview in drilling engineering and completion technology with an emphasis on field applications. Guest lecturers from the industry present several specialty lectures. Topics covered are outlined below. The student project is a drilling program including wellbore diagram, cement calculations and casing design.

Course Details

- **Text Books:**
  - Robert F. Mitchell, Stefan Z. Miska, *"Fundamentals of Drilling Engineering"*, SPE Textbook Series Vol. 12, 2011.
  - B. Guo, W. Lyons, A. Ghalambor, *"Petroleum Production Engineering, A Computer-Assisted Approach"*, Gulf Publication, 2007.
- **Additional useful references:**
  - Halliburton Cementing Tables (Red Book)
  - Adam T. Bourgoyne, "*Appled Drilling Engineering",* SPE Textbook series, Volume 2, 1986

- **Homework:** When homework assignments are given they will be due the next meeting and are to be turned in before the next lecture begins. If your homework is one week late, 50% off, 2 weeks late, no credit.

- **Grading:** PtE 465 grading is based on:
  - 12% homework
  - 25% mid-term
  - 25% final
  - 18% term project
  - 20% Lab

- **Mid-term date: 10/21/2014**
- **Final date: 12/16/2014 from 4:30 to 6:30 (study days 12/6 – 12/9/2014)**
- **Instructor:**
  - Brad Pierce (bpierce@breitburn.com)
  - Grader/Lab Assistant:

- **Meeting dates:**
    - Lecture Tuesday: 5:30 – 8:00 pm
    - Lab Tuesday: 8:10 – 9:10 pm
- **Meeting place:** KAP 146 (Kaprielian Hall)
- **Lab location:** PCE 313
- **Term project:** Due 11/26/2013

Exam Policy

USC Policy Talking during Exams:

If I catch you talking during an exam I will ask you to leave the classroom and you will receive a zero on the exam, your name will be reported to the engineering department and after a second incident you can be dismissed from the school.

Homework Solution Guidelines

When you answer the homework problems I would like for you follow these guidelines: What it boils down to, I want to see the work…

- The method and equations used to solve the problem must be presented. The result from each step does not need to be shown; however all the important equations used must be shown.
- The input values used in each equation if it was not given must be stated and shown.
- Any assumptions made in calculations with reasoning for it must be stated.
- All the input values should be collected and presented in a table in a spreadsheet.
- All the results should be collected and presented in a table in a spreadsheet.
- All the plots or graphs must be done in a spreadsheet with axis and plot labeled.
- All the plots and tables must be labeled.
- All the units must be shown for each important variable. Any unit conversion must be shown clearly.
- You can use either write it out or use a computer.
- All homework submitted must be formatted to be printed out on 8-1/2" x 11 paper.
- Points will be deducted for any of above guidelines that are not followed in the homework solutions submitted.

Lab Write-up Guidelines

When submitting lab write-ups please follow these guidelines:

- They should be typed, points will be deducted for lab write-ups that are submitted that are hand written.
- Labs should consist of the following topics: Purpose, Discussion, and a Conclusion. If the lab requires some type of calculations I want to see your work.

For correspondence by email, please use the following format for the subject of the email:

PTE 465_HW#_Last Name_First Name

One of the things that I have learned teaching at USC is that I cannot please everyone… If you have a problem with something that I am doing please let me know and we can discuss and resolve.

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Mr. Brad Pierce
Bpierce@breitburn.com

	Date			Presenter
Week 1	8/26/14	Chapter 1	Introduction to rotary drilling, Lab and Project Overview	Brad Pierce
Week 2	9/2/14	Chapter 2	Introduction to geomechanics in drilling	Brad Pierce
Week 3	9/9/14	Chapter 3	Drilling fluids Geo mud Lab demonstration	Brad Pierce
Week 4	9/16/14	Chapter 3 Chapter 5	Drill fluids and Drilling hydraulics - University of Texas Austin Film	Brad Pierce
Week 5	9/23/14	Chapter 5	Drilling hydraulics	Brad Pierce
Week 6	9/30/14	Chapter 6	Rotary Drilling Bits - IDAC Introduction	Brad Pierce
Week 7	10/7/14	Chapter 6	Rotary Drilling Bits – Baker Bits	Guest Speaker
Week 8	10/14/14	Chapter 7	Casing and Casing Design	Brad Pierce
Week 9	10/21/14		Mid-term (will only include material up through chapter 6)	Brad Pierce
Week 10	10/28/14	Chapter 7	Casing and Casing Design	Brad Pierce
Week 11	11/4/14	Chapter 4	Cementing	Brad Pierce
Week 12	11/11/14	Chapter 4	Cementing - Cement Demonstration - Red Book Problem Baker Lab demonstration	Baker/BRP
Week 13	11/18/14		Perforation / Gravel Packing Baker	Guest Speaker
Week 14	11/25/14	Chapter 16	Acidizing/Introduction to Fracture Stimulation Class Project is Due	Brad Pierce Guest Speaker
Week 15	12/2/14	Chapter 17	Fracture Stimulation Design	Guest Speaker
Friday	12/5/13		Last Day of Classes (Study days 12/6 – 12/9)	
	TBD		Drilling rig field trip (probably Thums)	Brad Pierce
Tuesday	12/16/14	Final	December Location to be determined (4:30 to 6:30)	Brad Pierce