PETR 3301 — Drilling I

Disclaimer: “Topics and/or dates may be changed during the semester at the instructor’s discretion because of scheduling issues, developments in the discipline, or other contingencies.”

Catalog Data:
Drilling I (3:3:0). Rotary drilling, well completion practices, including casing, cementing, perforating, and workovers. Design and use of equipment (Design Course).

Prerequisites:
GEOL 4334, PETR 2301, 2322, 3103, 3105, 3302, 3306, with a C or higher; PETR major; 3.0 GPA.

Co requisites:
PETR 3107, 3304, 4303, ENCO 3350

Textbook:

Reference:

Topics | Time* | Outcomes (Goals) | Assessment Method
---|---|---|---
Drilling, environment & society impact | 1 week | Understand world population, industrialization, and energy usage trends affect environment, society; this ethical issues are important to sound engineering practice | Homework, Quizzes, Exams
Fluids, exploration | 1 week | Understand oil fields, fluids, and exploration methods | Homework, Quizzes, Exams
Drilling equipment | 1 week | Select drilling equipment; components, description, operation, and elements of blow out prevention. | Homework, Quizzes, Exams
Drilling fluids | 2 weeks | Use drilling fluids, testing and calculations | Homework, Quizzes, Exams
Hydraulics | 3 weeks | Make hydraulics in drilling calculations | Homework, Quizzes, Exams
Casing methods | 1 week | Design casing; methods, procedure, and calculations | Homework, Quizzes, Exams
Cementing methods | 1 week | Design well cementing; equipment, methods, and calculations | Homework, Quizzes, Exams
Completion methods | 3 weeks | Design well completion methods | Homework, Quizzes, Exams
Exams | 1 week | 1 week | Weeks 5 (R Feb 21) & 10 (R Apr 4) | Exam 1 & Exam 2
| | | As scheduled by the university (F May 11, 7:30-10 am) | Final

*Dates are subject to change

Coordinators:
Lloyd R. Heinze, P.E. Ph.D.
Professor, Bob L. Herd department of Petroleum Engineering
TFPETR 228, Lloyd.Heinze@ttu.edu
Office Hours: email for appointment.

Attendance & Grading Policy:
Attendance is mandatory for all lectures and exam sessions. You will be dropped from the course after three absences. Any missed quizzes/homework will not be made up. Homework is due via blackboard; late homework will not be accepted.
1. Must have valid TTU id or driver’s license on desk or WILL NOT BE ALLOWED TO TAKE EXAM AND WILL FAIL COURSE
2. Back packs against walls with cell phone in them. Anyone caught with cell phone will be removed from the exam and given an F for course
3. Pencil and/or pen, straight edge, NCEES approved calculator
4. Exams will be picked up when done. DO NOT GET OUT OF SEAT UNTIL EXAM IS PICKED UP-THEN IMMEDIATELY EXIT ROOM
5. EXAM IS CLOSED BOOK – NO NOTES
6. No restroom breaks during exams
7. Must sit at assigned seat with your name on both the test and scantron
8. Due to large class size, exams may be administered in the evenings.
All grades will be posted and if a student has a question about their grade on that item (homework, quiz, and exam), they must come see the TA within 1 week of the grades being posted. Subsequent to that, exams may not be viewed again; reviewing exams assist students in learning the correct method to solve problems. Students do not get their exam back to keep. A student has the option
to schedule an appointment with the TA to review his/her answers from the scantron and compare that to the correct answer which a detailed solution is shown.

**Class Grad (CG):** Quiz/homework average (10%), two exams (30% each) and final exam (30%) of the course grade; missed exam due to an approved university excuse will be made up by counting the final exam double (exam missed not due to an approved university excuse will receive a grade of zero; you must pass the final exam to pass the course. **Quizzes:** Every lecture and discussion a quiz may be administered using a software/personal device system. Students sign up at [https://www.tophat.com/](https://www.tophat.com/) Course grade: 100-90% = A, 80-89% = B, 70-79% = C, 60-69% = D, below 60% = F.

**Class Time & Location:** Lecture Time: Tuesday & Thursday 9:30-10:50 am in TFPETR 110

**Course Web Site:** The University "blackboard" web site schedule of reading & homework assignments and TopHat

**Notes:**

**ADA Compliance:** Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructor’s office hours. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services office in 335 West Hall or 806-742-2405.

**Calculators:** Only approved NCEES calculators can be used during exams, tests and quizzes. A current list can be found at [http://www.ncees.org/exams/calculators/#policy](http://www.ncees.org/exams/calculators/#policy)

**Academic Integrity:** Academic Integrity is described in the Bulletin of Texas Tech University Undergraduate and Graduate Catalogue and OP 34.12. The penalty for Academic dishonesty will be a grade of “F” for the course.

**Policy Classroom Citizenship:** All students are expected to come to class alert and ready to participate. If you must leave the class before the end of the session, do not return. Sleeping, reading newspapers, surfing the net and doing homework for other classes are not allowed during class. Students are expected to assist in maintaining a classroom environment that is conducive to learning. PDA’s, cell phones, beepers and other electronic devices are distracting and should be silenced during class time. No Tobacco products are allowed. When exiting the classroom place your trash in the waste can, the next student will appreciate your diligence.

**RELIGIOUS HOLY DAY STATEMENT:** "Religious holy day" means a holy day observed by a religion whose places of worship are exempt from property taxation under Texas Tax Code §11.20. A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence. A student who is excused under section 2 may not be penalized for the absence; however, the instructor may respond appropriately if the student fails to complete the assignment satisfactorily.

**Prepared by / Date:** Lloyd R. Heinze / 17 January 2019

All of the course topics, listed in above, are related to the ABET 1-7 student outcomes as shown in below.
<table>
<thead>
<tr>
<th>ABET Student Outcomes 1-7</th>
<th>The student outcome is:</th>
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<tbody>
<tr>
<td>1. An ability to identify, formulate, and solve engineering problems by applying principles of engineering, science, and mathematics.</td>
<td><strong>Emphasized</strong> in this course</td>
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<td>2. An ability to apply both analysis and synthesis in the engineering design process, resulting in designs that meet desired needs.</td>
<td><strong>Enforced</strong> in this course</td>
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<td>3. An ability to develop and conduct appropriate experimentation, <strong>analyze and interpret data, and use engineering judgment to draw conclusions.</strong></td>
<td><strong>Emphasized</strong> in this course</td>
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<td>4. An ability to communicate effectively with a range of audiences.</td>
<td><strong>Not related</strong> to this class</td>
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<td>5. An ability to <strong>recognize ethical and professional responsibilities in engineering situations and make informed judgments</strong>, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.</td>
<td><strong>Emphasized</strong> in this course</td>
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<td>6. An ability to recognize the ongoing need for additional knowledge and locate, evaluate, integrate, and apply this knowledge appropriately.</td>
<td><strong>Emphasized</strong> in this course</td>
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<tr>
<td>7. An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and <strong>analyze risk and uncertainty.</strong></td>
<td><strong>Not related</strong> to this class</td>
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At the end of the semester, the attainment of the student outcomes which related to the course at this level, will be measure and reported to ABET committee members.