CASPER COLLEGE COURSE SYLLABUS
EXTR 2510 Introduction to Well Drilling

Semester/Year: Spring 2016

Lecture Hours: 3  Lab Hours: .5  Credit Hours: 3.5

Class Time: Moodle  Days: Moodle  Room: Moodle

Instructor’s Name: Ken Kreckel

Instructor’s Contact Information: Office Phone: 268-3457  Email: kkreckel@caspercollege.edu

Office Phone: 307 251-1370

Course Description: An introduction to the basics of drilling in the extractive industries. Topics will include an overview of the purpose, type and mechanics of drilling. Emphasis will be placed on Wyoming industries such as oil and gas, coal bed methane, uranium, and soda ash. The type and size of various rigs will be discussed. Drilling operations including the selection of rigs, bits, well control, and logging will be introduced. The course will include the discussion of casing runs, cementing, and a brief introduction to completion operations.

Statement of Prerequisites: None or permission of the instructor

Goal: Acquire an understanding of terminology and techniques for drilling wells for oil and gas, the proper approach to the problem of drilling wells, and the skill to understand current drilling technologies.

Outcomes: Upon completion of this course, the student will
1. Demonstrate knowledgeable of the various rig types, operations and purposes
2. Demonstrate knowledge of the various mechanical components of rigs
3. Demonstrate knowledge of bit selection, casing design, cementing operations
4. Demonstrate knowledge of mud logging and openhole logging.

In pursing these outcomes, students will:
1. Demonstrate effective oral and written communication
2. Use the scientific method
3. Use appropriate technology and information to conduct research
4. Use quantitative analytical skills to evaluate and process numerical data

Methodology: Moodle will be the main delivery system for this course. The course is divided into weeks [see Moodle page] which correspond to the major topics on the syllabus. Each week will have some combination of the following:

1. Reading assignment
2. Power point presentation [.pdf]
3. Online activity: either a learning site, enrichment, or other relevant site
4. Other activity: problem solving, mapping or chart example, etc.
5. Discussion forum[online]: On some weeks I will post a series of questions on the forum covering the major points for that week. Participation is mandatory and a portion of your grade will be based on the quality of your participation [see Forum Rubric example]

6. Test or quiz periodically

Note: Student feedback is valuable as the instructor uses course evaluations in determining course methodology.

**Evaluation Criteria:** There will be three hours of lecture per week, plus weekly activities. Tests [50-60%] and weekly work equal 100% of the course grade. However it is essential the student complete all assignments in order to perform well on the tests. **Casper College may collect samples of student work demonstrating achievement of the above outcomes. Any personally identifying information will be removed from student work.**

**Required Text, Readings, and Materials:** Moodle. A Primer of Oilwell Drilling by Ron Baker. Available online. Although a new edition is available, older editions are OK.

**Class Policies:** Last Date to Change to Audit Status or to Withdraw with a W Grade: as per Casper College policies (withdrawal deadline; see: “Admission and Registration – Schedule Changes” in the catalog)

**Student Rights and Responsibilities:** Please refer to the Casper College Student Conduct and Judicial Code for information concerning your rights and responsibilities as a Casper College Student.

**Chain of Command:** If you have any problems with this class, you should first contact the instructor to attempt to solve the problem. If you are not satisfied with the solution offered by the instructor, you should then take the matter through the appropriate chain of command starting with the Department Head/Program Director, the Dean, and lastly the Vice President for Academic Affairs.

**Academic Dishonesty:** (Cheating & Plagiarism) Casper College demands intellectual honesty. Proven plagiarism or any form of dishonesty associated with the academic process can result in the offender failing the course in which the offense was committed or expulsion from school. See the Casper College Student Code of Conduct for more information on this topic.

**Official Means of Communication:** Casper College faculty and staff will employ the student’s assigned Casper College email account as a primary method of communication. Students are responsible to check their account regularly. This is also where you will find course evaluation links during course evaluation periods.

**ADA Accommodations Policy:** If you need academic accommodations because of a disability, please inform me as soon as possible. See me privately after class, or during my office hours. To request academic accommodations, students must first consult with the college’s Disability Services Counselor located in the Gateway Building, Room 344, (307) 268-2557, bheuer@caspercollege.edu. The Disability Services Counselor is responsible for reviewing documentation provided by students requesting accommodations, determining eligibility for accommodations, and helping students request and use appropriate accommodations.

**Calendar or schedule indicating course content:** See course Moodle page for details and updates

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<tr>
<th>PERIOD</th>
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<tr>
<td>Week 1</td>
<td>Introduction</td>
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Primer Ch 1-3 Are we running out of oil?

Week 2: Overview Overview of the Extractive Industries
Primer Ch 4-5 Overview of Types and sizes of Drilling rigs
Who does what

Week 3: Geology Where is oil and gas present?
Primer Ch 6 What are traps associated with hydrocarbons?
How Did It Get There

Week 4: Pre Spud Operations Seismic Surveys
Ch 7 Application for Permit to Drill
Overview of Types and sizes of Drilling rigs
Who does what
Archeological Surveys
Environmental Assessments

Weeks 5-6: Equipment Systems: Prime Movers
Mud Pumps/air compressors
Solids Equipment
Derricks
Mid-course review

Week 7: **Midterm Exam**
Rig photos

Weeks 8: Normal Drilling Operations Rotating
Primer Ch 10 Making Connections
Tripping

Week 9: Abnormal Drilling Operations: Problems
Fishing

Week 10: Well Control Solids Separation

Week 11 Directional Drilling

Week 12: Open Hole Logging Conditioning Hole
Primer Ch 11 Surface Equipment
Conditioning Hole
Mud Logging
Wireline/Conductor
Types of Logs
Interpretation of Logs

Weeks 13: Casing Operations Design of Casing Strings
Primer Ch 12 Running Casing
Conditioning Hole
Surface Equipment
Mud Logging
Wireline/Conductor
Types of Logs
Interpretation of Logs
Cementing Casing
Week 14: Completion Ops  
Primer Ch 12  
Cased Hole Logs  
Perforation  
Stimulation  
Course review

Week 15: **Comprehensive Final**