

The University of Tulsa
Petroleum Engineering Department
Course Syllabus

Course General Information

Number	Title	Credit Hours	Required or Elective
PE3043	Drilling Engineering I	3	Required

Catalog Description

Rotary drilling systems, drilling fluids, drilling fluid hydraulics, drill bit hydraulics, cuttings transport, well control mechanics, overview of well drilling planning.

Requisites

Number	Title	Type (Pre or Co)
ES3003	Introductory Fluid Mechanics	Pre
ES3023	Mechanics of Materials	Pre
MATH3073	Differential Equations	Pre

Requisites by Topics

ES3003: Bernoulli's Equation, Properties of fluids, incompressible flow in pipes, equations of continuity and motion.
 ES3023: Definition of stress, mechanical properties of engineering materials, stress and deflection analysis of mechanical components
 MATH3073: first, second order equations, applications to science and engineering.

Class/Lab Schedule

This course consists of two class sessions per week. The duration of each class is one hour and fifteen minutes. There is no lab associated with this course.

Textbook and other Required Material

Applied Drilling Engineering, by Adam T. Bourgoyne Jr., Martin E. Chenevert, Keith K. Millheim and F.S. Young Jr., Society of Petroleum Engineers, Richardson, TX, 1991.

Course Objectives

To develop an understanding and a working knowledge in drilling engineering; To use fundamental engineering science principles for well drilling design; To develop analytical tools based on the engineering concepts for drilling operations.

Main Topics Covered

Rotary drilling subsystems, drilling fluids, drilling fluid hydraulics, drill bit hydraulics, cuttings transport, well control mechanics, overview of well planning.

Contribution to ABET Professional Program Criteria

ABET Professional Program Criteria are statements describing competencies that students must possess by the time of graduation. This course contribute to the following Program Specific Criteria.

Program Specific Criteria	
b	Competency in design and analysis of well systems and procedures for drilling and completing wells

Relationship to ABET Program Outcomes

Program outcomes describe what students are expected to know or be able to do by the time of graduation from the Program. The following table summarizes the contribution of this course to the Program outcomes.

a	Ability to apply knowledge of mathematics, science, and engineering
c	Ability to design a system, component, or process to meet desired needs

Contribution to Program Professional Component and to Design Component

Course material and projects of this course use the fundamental science, mathematics and the engineering principles to design drilling systems to meet certain needs. The course contributes to the Program Professional Component and Design Component by applying the fundamental sciences, mathematics and engineering principles.

Person Responsible for Course Syllabus

This syllabus was prepared by Dr. Mengjiao Yu

Fall 2009 Information

<i>Instructor:</i>	Dr. Mengjiao Yu	
<i>Class Hours:</i>	Tuesday and Thursday	12:30-1:45pm at Kep U1
<i>Office Hours:</i>	Tuesday and Thursday	2:00-3:00pm , KEP L123
<i>Grading:</i>		