

Texas A&M University — Department of Petroleum Engineering
Proposed Course Syllabus

Number and Name of Course: PETE 689 Special Topics in Horizontal, Multilateral and Intelligent Wells

Hours: Theory 3 Practice 0 Total 3 Credits 3

Prerequisites: graduate classification

Curricula Requiring this course: [] None, this course will be an elective.

1. _____ 2. _____ 3. _____

Description of Course: (Concise Statement of purpose of design)

This course will cover advanced well architectures, primarily horizontal, multilateral and intelligent wells. The course will discuss all aspects of these types of wells, including well completions, reservoir flow, and wellbore flow conditions, and well deliverability. Optimization of well design and field applications will be demonstrated with field cases.

Text Materials:

- Draft copy of chapters, *Multilateral Wells*, A. Daniel Hill, D. Zhu and M. J. Economides, SPE, 2005
- Supplemental papers from the literature

Course Outline: (by major topics, and approximate time for each topic)

Topic	Description	Time
1	Purposes and Applications of Multilateral Wells	1.5 hrs
2	Horizontal and Multilateral Completions: Junction completion techniques – TAML levels Lateral completions – openhole, slotted liner, cased-cemented, gravel pack Completion performance	3 hrs 4.5 hrs
	Horizontal lateral completion models Skin factors for laterals – formation damage, partial penetration, and perforation effects	
3	Horizontal and Multilateral Well Performance Prediction Reservoir Inflow Performance for Horizontal Well Analytical models of horizontal wellbore inflow Point/Line source methods Reservoir simulation approach Gas reservoir performance Wellbore flow behavior	9hrs 6hrs
	Δp in laterals Main wellbore pressure profile	
	Multilateral well deliverability Coupling of reservoir and wellbore flow behavior Wellhead performance prediction Determining crossflow conditions	6hrs
4	Intelligent (Smart) Wells Downhole monitoring Temperature Pressure Flow rate Fiber optic measurements Downhole control	3 hrs 3 hrs
	Sliding sleeves Downhole chokes	

total: 42 hrsCourse grading:

Midterm Exam.....	(30%)
Final Exam.....	(40%)
Class Projects/Homeworks.....	(30%)
Total.....	(100%)

Course Instructor/Supervisor:

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Miscellaneous:

ABET Classification: Science: _____ Design: _____ Math: _____ Other: _____
 Laboratory Requirements: Yes: _____ No: x
 Equipment Required: None

ADA Policy Statement: (Texas A&M University Policy Statement)

Americans with Disabilities Act (ADA) Policy Statement

The following ADA Policy Statement (part of the Policy on Individual Disabling Conditions) was submitted to the UCC by the Department of Student Life. The policy Statement was forwarded to the Faculty Senate for information.

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Suggested for Inclusion in Your First Day Handout or Syllabus

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