

**Course Syllabus: PTRT 1473 – Exploration and Production II (Lecture)**

**Location:** Houston Community College, Northeast Campus, 555 Community College Drive, Houston 77013; Science & Technology Building (also known as Building 8) Room 214

**CLASS DATES:** Summer Semester – June 6, 2016 to July 27, 2016

**Course Number:** 13607

**CREDIT HOURS:** 4.00

**CLASS TIME:** Monday & Wednesday, 5:00 pm -9:00 pm

**HOUSTON COMMUNITY COLLEGE (NORTHEAST CAMPUS) MISSION STATEMENT:**

Houston Community College will be the most **relevant** community college in the country. We will be the **opportunity** institution for every student we serve – **essential** to our community's success.

**WELCOME:**

We welcome each of you to a semester of comprehensive study based upon an industry view of the oil and gas industry. With participation, each student will exit this course with a more expanded view of this industry than when they first entered. Technical review and class participation in all of its aspects is the key and that is what will be expected.

**Course Description:** A study of the petroleum industry will be undertaken from the exploration and production perspective. The current knowledge and technical aspects of the oil and gas industry will be taught with regard to the various operational functionalities as outlined in the course content.

**Prerequisites:** PTRT-1301 -Overview of Petroleum Industry, PTRT 1470 – Petroleum Data Management I, MATH 1314 – College Algebra, PTRT 1313 – Industrial Safety, CPMT 1303 – Computing Technology

**Learning objectives:** Upon completion of this course, students will be able to describe the following exploration and production practices in the petroleum industry – roles and responsibilities, oil and gas formations, oil and gas traps, porosity and permeability, fluid flow through reservoir rocks, seismic techniques, open hole logging and formation

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evaluation to assess reservoir, production logs to monitor fluid location, reserve assessment, recovery factors, drill well planning, existing production well surveillance, safety, environment, well production behavior, surface facilities, production operations, maintenance, managing decline, decommissioning. Students will be able to speak more responsibly about exploration and production aspects of the oil and gas industry.

**Instructor Information:**

Instructor: Thomas (Tom) Lane  
Phone Number: 830-832-6018 (cell)  
Email: [Thomas.Lane@hccs.edu](mailto:Thomas.Lane@hccs.edu)

Course schedule: Monday and Wednesday 5:00 pm – 9:00 pm  
Office Hours: 4-5pm before all classes (call/email me to meet)

**Instructors Biography:** Petroleum Engineer, ExxonMobil, 1976-2015.  
HCC Adjunct Instructor 2015-2016

**Education:** B.S Mechanical Engineering, SMU, Dallas, Texas

**TEXTBOOK****INFORMATION:**

**Hydrocarbon Exploration and Production, Second Edition, 2011 printing, By Frank Jahn, Mark Cook and Mark Graham, ISBN-13: 978-0-444-53236-7, Free E-version on Learning Web.**

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Used book cost \$ 27+2= 29 at Amazon.com

Class instruction will be from the textbook. Homework reading and test questions will be from the textbook and class discussions. Tests are open book. You cannot share your book with another student or use the instructor's book.

**Lab Requirements:**

**Will tour outside production equipment by classroom.**

**Students with Disabilities:**

"Any student with a documented disability (e.g. physical, learning, psychiatric, vision, hearing, etc.) who needs to arrange reasonable accommodations must contact the Disability Services Office at the respective college at the beginning of each semester. Faculty is authorized to provide only the accommodations requested by the Disability Support Services Office." For questions, contact Donna Price at 713-718-5165 or the Disability Counselor at each college. Also visit the ADA web site at:

<http://www.hccs.edu/students/disability/index.htm>.

Faculty Handbook/Faculty Orientation is also available at <http://www.hccs.edu/students/disability/faculty.htm>.

**TITLE IX OF THE EDUCATION AMENDMENTS OF 1972, 20 U.S.C. A§ 1681 ET. SEQ.**

Title IX of the Education Amendments of 1972 requires that institutions have policies and procedures that protect students' rights with regard to sex/gender discrimination. Information regarding these rights are on the HCC website under Students-Anti-discrimination. Students who are pregnant and require accommodations should contact any of the ADA Counselors for assistance.

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It is important that every student understands and conforms to respectful behavior while at HCC. Sexual misconduct is not condoned and will be addressed promptly. Know your rights and how to avoid these difficult situations.

Log in to: [www.edurisksolutions.org](http://www.edurisksolutions.org) . Sign in using your HCC student e-mail account, then go to the button at the top right that says **Login** and enter your student number.

### **METHOD OF INSTRUCTION:**

A lecture format is used. Slides and handouts will supplement the material where needed. Class discussion of key concepts and student presentations will be employed so that the student will be able to obtain a basic understanding of exploration and production concepts that are utilized in the oil and gas industry. *Use of laptop, tablet, phone is encouraged to research technical and operational data in class and to take tests.* Students are encouraged to ask questions and will be expected to participate in class. It is therefore important for each student to read the assignments and come prepared to participate. If you have to miss a class, contact Instructor prior to class, so you can be counted as “present” in the attendance record. You will be responsible to submit the missed work at the next class. Class material will be posted on Learning Web

### **CLASS POLICIES:**

#### **Academic Honesty:**

All HCC rules, policies, and regulations apply as they are described in the current HCC Student Handbook.

#### **Attendance and Withdrawal Policies:**

All students are required to be present during class sessions. Students must communicate with the instructor in cases they

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need to be absent from a class period. Withdrawal policies apply as they are described in the HCC policy, rules, and regulations. All students must consult the HCC Student Handbook and College Catalogue regarding withdrawal.

### Course Requirements and Grading Policy:

All students are expected to be on time for lectures and to participate during lectures in the course.

<u>Letter Grade</u>	<u>Test/Project Score</u>
A	90-100
B	80-89
C	70-79
D	60-69
F	0-59

### Testing:

There are only 15 class sessions for this 4-credit hour summer course. There are **36 hours** of e-instruction (additional work at home) assigned to this course to compensate for the reduced number of class sessions. Each test and technical presentation will have a maximum score of 100 points. Students should take each test on time so as to afford themselves ample time for completion. In the class prior to the test, a summary of key points will be handed out in class and posted on the Learning Web. **Tests** – there will be 6 tests and 1 final test, all open book and internet use. The average score of these 7 tests will be 60% of the final grade. **Technical Presentations** – there will

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be 3 individual presentations and 1 group presentation. The average score of these 4 presentations will be 40% of the final grade. Course grade is calculated  $0.6 \times \text{test average} + 0.4 \times \text{presentation average}$ . Any test or presentation not done is given a grade of "0", which significantly impacts your course grade.

**Make-Up  
Policy:**

No make-up tests will be allowed

**Student  
Survey:**

**Evaluation for Greater Learning Student Survey System**

At HCC, Management and professors believe that thoughtful student feedback is necessary to improve teaching and learning. During a designated time, you will be asked to answer a short online survey of research-based questions related to instruction. The anonymous results of the survey will be made available to your professor and division chair for continual improvement of instruction.

**Course Content:**

**Text Book topic – Chapter number**

- Life Cycle - 1
- Agreements - 2
- Exploration - 3
- Drilling – 4
- Safety & Environment – 5

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- Reservoir Description - 6
- Volumetric Estimation – 7
- Field Appraisal – 8
- Reservoir Dynamic Behavior - 9
- Well Dynamic Behavior - 10
- Surface Facilities – 11
- Production Operations and Maintenance – 12
- Project and Contract Management – 13
- Managing the Producing Field – 16
- Managing Decline – 17
- Decommissioning – 18

### Class schedule (15 classes)

<b>June 6:</b>	First day of Class: Class Overview and Orientation, Review of Class Syllabus, Class Schedule of activities. Use of laptop, tablet, phone. Tests, technical presentations, course grading. Jobs. SPE. Roles and Responsibilities. Technician jobs, oil and gas companies. Oil production by country. Discuss Chap 1, 2
<b>June 8:</b>	<b>Test 1</b> – Chap 1, 2. Develop Individual Presentation # 1
<b>June 13:</b>	Individual <b>Presentation #1</b> . Discuss Chap 3, 4
<b>June 15:</b>	<b>Test 2</b> –Chap 3, 4. Develop Presentation # 2. Plan out group presentation # 4

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<b>June 20:</b>	Individual <b>Presentation # 2.</b> Discuss Chap 5, 6, 7
<b>June 22:</b>	<b>Test 3</b> –Chap 5, 6, 7. Develop Presentation # 3
<b>June 27:</b>	Individual <b>Presentation # 3.</b> Discuss Chap 8, 9, 10
<b>June 29:</b>	<b>Test 4</b> -Chap 8, 9, 10. Work on Group Presentation # 4
<b>July 4:</b>	No class, holiday
<b>July 6:</b>	Make up tests and presentations, if not already done. Work on group presentations
<b>July 11:</b>	Group <b>Presentation # 4.</b> Discuss Chap 11, 12, 13
<b>July 13:</b>	<b>Test 5</b> - Chap 11, 12, 13
<b>July 18:</b>	Make up tests and presentations, if not all completed. Discuss Chap 16, 17, 18
<b>July 20:</b>	<b>Test 6</b> - Chap 16, 17, 18. Review for final exam
<b>July 25:</b>	Final Exam - <b>Test 7</b>
<b>July 27:</b>	Final Exam - <b>Test 7</b> (second chance to take final exam, if didn't take it July 25). Grades entered into HCC System after class



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Notes: The instructor may supplement any of the above-mentioned subjects with industry-based articles and publications, and adjust test dates

**OTHER STUDENT INFORMATION (CLUBS, TUTORING, WEB RESOURCES, ETC.)**

Students are encouraged to join the SPE, Society of Petroleum Engineers Gulf Coast Section. Additional help and support is available upon request. HCC SPE Class trips may be scheduled at industry sites to further hands-on application. Students will be notified in advance.

The American Chemical Society

The American Institute of Chemical Engineers

The Center for the Advancement of Process Technology

The Gulf Coast Process Technology Alliance

The American Chemical Society Students Affiliates Section

APG – American Society Petroleum Geologists

[www.geology.com](http://www.geology.com)

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**Technical Presentation Options:**

Students can select topics of interest to them that are related to the course

Consider current new events, technical issues, equipment use, new technology

Discuss advantages / disadvantages, cost benefits

Review book table of contents for possible topics

Presentation should include analytical thinking rather than just repeating something

Consider report on trip to Galveston oil and gas museum

Use Vendors / contractors web sites

Role of geologist in seismic exploration, exploration drilling, drill well formation evaluation, reserve estimating, map drawing,

How fields in the world were formed, developed – can pick 1 field or basin

Type of reserve assessments

Geologist's drill well assessment

Drilling issues

Hydraulic fracturing integrity, public concerns, fact vs fiction

Open hole logging tools

Cased hole production logging tools

Land and offshore seismic equipment and operations

Facility operations and maintenance

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**Technical Presentation Format (PowerPoint preferred, WORD is fine):**

- I. Title Page – Presentation title, course name, your name, date. 1 page
- II. Introduction - What is the Issue? What are the objectives of your presentation? 1 page
- III. Technical information, photos, schematics. Information about advantages / disadvantages or cost/benefit or new technology or case histories. 3 pages
- IV. Summary, Conclusion, or Recommendation. Clarify your message. 1 page
- V. References – sources used to obtain your information. 1 page

The above plan is for individual presentations. The Group Presentation should be more in depth, with Section III increasing from 3 pages to 6 pages. With 8 students in class, there will be four groups with two students in each group.