PETE 606-300 Course Syllabus – Summer 2017
M-W 01:00-02:50 pm- RICH 208-On Campus Section

Instructor: Dr. Berna Hascakir, Texas A&M University - Petroleum Engineering Department
Office: Richardson 401 N
Telephone: 979-845-6614
e-mail: hascakir@tamu.edu
Office Hours: M/W 3:00 pm to 5:00 pm CST.

Catalog Description: Fundamentals and theory of thermal enhanced oil recovery methods; hot water flooding, steam flooding, cyclic steam injection (CCS), steam assisted gravity drainage (SAGD), solvent-steam processes, in-situ combustion, advances in thermal EOR; application of heat and mass transfer in thermal-EOR methods; strategies and displacement performance calculations. Lecture videos will be posted on e-campus after the class.

Teaching Assistances: Matthew Morte (matthewmorte@tamu.edu) & Taniya Kar (atat7142710@tamu.edu)
Office Hours : TBD

Instructional Objectives

Topics Covered:

1. Introduction
2. Heat Transfer
3. Hot-Water Drives
4. Steam Injection
5. In-Situ Combustion
6. Other thermal processes

Contributions to Meeting the Curriculum Requirements of Criterion:

Math and Science	None
Petroleum Engineering	This course provides students with a fundamental background on the determination and evaluation of thermal EOR methods.
General Education	None

Course Learning Outcomes and Relationship to Program Outcomes:

Course Learning Outcome: At the end of the course, students will be able to…	**Program Outcomes**
Describe the thermal EOR methods used in recovery high density and viscosity crude oils.	11
Calculate the oil recovery factor, water recovery factor, water cut, steam to oil ratio, air requirement.	5
Describe the laboratory procedures required for a successful thermal EOR process.	1,3,5
Determine and propose the most effective and environmental friendly thermal EOR technology.	2,3

Related Program Outcomes:

No.	**PETE graduates must have…**
1	An ability to apply knowledge of mathematics, science, and engineering.
2	An ability to design a therma; EOR project by analyzing and interpreting data.
3	An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
5	An ability to identify, formulate, and solve engineering problems.
11	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

COURSE SCHEDULE FOR SUMMER 2017

Date	Day	Lecture Number	Topic	Assignment	Due Date
31-May	Wednesday	L1	Introduction		
5- June	Monday	L2	Heat and Mass Transfer	HW1	
7-June	Wednesday	L3	Heat and Mass Transfer		
12-June	Monday	L4	Hot Fluid Injection		
14-June	Wednesday	L5	Hot Fluid Injection		
19-June	Monday	L6	Hot Fluid Injection		
21-June	Wednesday	L7	Steam Drives		HW1
26-June	Monday	L8	Steam Drives	HW2	
28-June	Wednesday	L9	Steam Drives		
3-July	Monday	L10	Cyclic steam and SAGD		
5-July	Wednesday	L11	SAGD & Solvent-Steam Processes		
10-July	Monday	L12	SAGD & Solvent-Steam Processes		
12-July	Wednesday	L13	In-Situ Combustion		HW2
17-July	Monday	L14	In-Situ Combustion	HW3	
19-July	Wednesday	L15	In-Situ Combustion		
24-July	Monday	L16	In-Situ Combustion		
26-July	Wednesday	L17	Other application, oil shale extraction		
31-July	Monday	L18	Other application, coal extraction		
2-August	Wednesday	L19	Other application, electrical heating		HW3
7-August	Monday	L20	Other application, dielectric heating		
8/9-August	Tu/W	Final Examination Date TBD			

* Scheduled program and the exam dates may change.

COURSE POLICIES

Prerequisites: PETE 310

Required Textbook: Michael Prats (MP), Thermal Recovery, SPE Monograph, Volume 7, 1982. Jacques Burger (JB), Pierre Sourieau, Michel Combarnous, Thermal Methods of Oil Recovery, 1985. James G. Speight (JS), The Chemistry and Technology of Petroleum, Second Edition, Dekker, PETE 606 class notes, Related technical papers.

Communication: Note that class instructor may not be available during some office hours due to business related travels. Thus, all requests from students **must be sent** via e-mail. E-mails must be sent to class TA and CCed to the instructor via e-mail. Concerns on technical issues such as video capturing, e-campus access, remote connections, etc. should be directed to distance learning coordinators (https://engineering.tamu.edu/petroleum/academics/distance-learning/contact-info). The communication can also be done through phone (see instructor contacts at the first page of the syllabus), through skype (skype name: bernahascakir) and facebook (https://www.facebook.com/profile.php?id=100004619437921). Students should send an e-mail and get an appointment for skype communication.

Classroom Behavior: Texas A&M University supports the principle of **freedom of expression for both instructors and students**. The university respects the rights of the instructors to teach and the students to learn. Maintenance of these rights requires classroom conditions that do not impede their exercise. Classroom behavior that seriously interferes with either (1) instructor's ability to conduct the class or (2) the ability of other students to profit from the instructional program will not be tolerated. An individual engaging in disruptive classroom behavior may be subject to disciplinary action. For additional information please visit http://student-rules.tamu.edu/rule21.

Attendance: Texas A&M views class attendance as an individual student responsibility (http://student-rules.tamu.edu/rule07). Attendance is essential to complete the course successfully. Material presented in lecture and class discussion may expand upon points only briefly considered in the required text.

Excused Absences: Rules concerning excused absences may be found at http://student-rules.tamu.edu/rule07. Except for absences due to religious obligations, **the student must notify her or his instructor in writing (acknowledged e-mail**

message is acceptable) prior to the date of absence if such notification is feasible. **In cases where advance notification is not feasible (e.g. accident, or emergency) the student must provide notification by the end of the second working day after the absence.** This notification should include an explanation of why notice could not be sent prior to the class. If the absence is excused, the instructor must either provide the student with an opportunity to make up any quiz, exam or other graded activities or provide a satisfactory alternative to be completed within 30 calendar days from the last day of the absence. **Excused Absences for Religious Holy Days**: Texas House Bill (effective 9/1/03) states "An institution of higher education shall excuse a student from attending classes or other required activities, including examinations, for the observance of a religious holy day, including travel for that purpose. A student whose absence is excused under this subsection may not be penalized for that absence and shall be allowed to take an examination or complete an assignment from which the student is excused within a reasonable amount of time after the absence." **Makeup Policy**: Makeup exams will be given without question for excused absences as defined by University Regulations. If you miss an exam for any other reason, you may request a makeup, but the makeup exam may have a different format from that given in class, must be completed within one week of the original exam date, and there will be a 5% penalty.

Exams: There will be **NO** exam during the semester. Students will earn their grades from homework and in-class activity assignments.

Assignments: Late assignments will normally be given a grade of zero. Once in two or three week, a homework assignment will be posted to e-campus. Students are responsible to answer all homework problems and submit their work to the TA. Assignments should be neat, easy to understand, and straight forward. If the assignment is not legible or easy to follow then a grade of zero will be given.

In-Class Activities (ICA): There will be several in-class activity assignments throughout the semester. They will be assigned randomly and announced through e-campus under assignments. Students should follow the lecture videos to complete the ICA assignments. While the answers of some ICA assignments will be shared in the classroom (verbally or written), some of them will be in the test format with multiple choice questions or in question and answer format (regular exam format).

Extra Credits: There may be opportunities to earn extra credit during the semester. These activities will be announced in class. **There are no make-ups or substitutions for extra-credit opportunities**.

Student Conduct: **Academic Integrity Statement and Policy**, Aggie Code of Honor *"An Aggie does not lie, cheat, or steal or tolerate those who do."* Upon accepting admission to Texas A&M University, a student immediately accepts a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System. For more information: http://aggiehonor.tamu.edu/.
Each work that you turn in for this class MUST include your signature and the following statement. "On my honor, as an Aggie, I have neither given nor received unauthorized aid on this academic work."

Grading Policy: Your grading will be calculated according to the table given below. Letter grades will be assigned to the following guideline: A=90-100 (Excellent), B= 80-89 (Good), C=70-79 (Satisfactory), D=60-69 (Passing), F=59 and below (Failing); I=Incomplete.

Assignment	Details	% of Grade
0. Syllabus	Reading syllabus and acknowledging via e-campus on the first week of the semester. If any communication (personal or e-mail) with student indicates that student did not read the syllabus, then, student will not earn this grade.	**5**
1. HW	HW1 **(15%)**, HW2 **(15%)**, HW3 **(15%)**	**45**
2. In Class Activity	The solution of in class activities may be given during the class, students are responsible for watching all classes and following all class activities, not all class activities will be submitted, submission will be requested randomly by the class instructor.	**50**

Your grade in this class is earned, not awarded. I will NOT consider rounding up your overall grade. Throughout the semester, after each assignment or exam, you will be informed about your earned grade from that assignment. The class instructor is the only authority who will judge the students' performances. There will be **no negotiation on students' grades**. **Students are allowed to discuss their grades on each assignment (HW, Quiz, Exam, report, in class activity. etc.) within only one week after grades are posted on e-campus**. This discussion can only be made with class TA and can only be carried to the class instructor by the class TA. Students cannot request to review of their exam papers or any other

assignments after one week past their grade announcement. Instructor is the only authority to decide on students overall performances. Decision made or claimed to be made by class TA on students' performances or grades are not accepted. Undocumented or documented communications on grade decision with class TA will not be accepted as evidences for any circumstances.

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.

The Americans with Disabilities Act (ADA) is a federal antidiscrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu.

Coursework Copyright Statement: (Texas A&M University Policy Statement)

The handouts used in this course are copyrighted. The term "handouts" refers to all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, **you do not have the right to copy them**, unless you are expressly granted permission.

As commonly defined, plagiarism consists of passing off as one's own the ideas, words, writing, etc., that belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. If you have any questions about plagiarism and/or copying, please consult the latest issue of the *Texas A&M University Student Rules*, under the section "Scholastic Dishonesty".

Prepared by: Berna Hascakir, April 11, 2017.