KOMAR UNIVERSITY OF SCIENCE AND TECHNOLOGY
(KUST)

SURFACE PRODUCTION ENGINEERING SYLLABUS			
Course Title	**Surface Production Engineering**		
Course Code	**PTE 4330**	**No. of Credits**	**3 Credit Hours**
Department	**Petroleum Engineering**	**College**	**Engineering**
Pre-requisites Course Code	**PTE 3335**	**Co-requisites Course Code**	**N/A**
Course Coordinator(s)	**Muhammad Ali**		
Email	**muhammad.ali@komar.edu.iq**	**IP No.**	**134**
Other Course Teacher(s)/Tutor(s)	**None**		
Class Hours	**SUN/TUE: 08:00-09:30 Room: 111**		
Contact Hours	**MON: 13:00 - 16:00 Room: 218**		
Course Type	**Departmental Requirement**		
Offer in Academic Year	**Fall 2015**		

COURSE DESCRIPTION

This course will cover advance techniques required for the petroleum surface production engineering and Petroleum Refinery operations. The course will start with the Nodal Analysis; give the design parameters of separators and introduction to petroleum transportation. Later on Emphasis will be placed on developing a basic understanding of petroleum chemistry with applications to process design & analysis of typical refinery operations.

COURSE OBJECTIVES

The course will equip students with the knowledge required for entry level engineer to work as a process engineer.

COURSE LEARNING OUTCOMES

After participating in the course, students should be able to:

1. Understand the surface production operations
2. Conduct Nodal Analysis
3. Calculate Separator Parameters
4. Learn Petroleum transportation Methods
5. Develop a basic understanding of petroleum chemistry with applications to process design
6. Understanding how to use crude oil assays will play a key part in the class
7. Describe the value chains from typical raw materials to key intermediates
8. Examine the production of hydrocarbon products
9. Develop the understanding of distillation process, coking and thermal process, Catalytic cracking with applications to process design
10. Manage sulfur in the refining process

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RELATED PROGRAM OUTCOMES:	
A	An ability to apply knowledge of mathematics, science, and engineering
E	An ability to identify, formulate, and solve engineering problems
K	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.
Reference:http://www.abet.org/eac-criteria-2014-2015/	

GUIDELINES ON GRADING POLICY

Points	Percentage Scores	Grade
A	95–100	4.0
A-	90-94	3.7
B+	87–89	3.3
B	83-86	3.0
sB-	80-82	2.7
C+	75–79	2.3
C	70-74	2.0
C-	65-69	1.7
D+	60–64	1.3
D	55-59	1.0
D-	50-54	0.7
F	0–49	0
I	Incomplete Course Work	
W	Official Withdrawal	

Passing Grade is 65% or above

COURSE CONTENTS

Course topics include:

1. Introduction To Advanced Production Engineering
2. Nodal Analysis
3. Separation Systems
4. Transportation System
5. Petroleum Refining Overview
6. Refinery Products
7. Refinery Feedstocks
8. Overview of separation & conversion technologies
9. Supporting Processes
10. Health Safety and Environment

****Note: Adding more chapters is governed by the time.***

Course Teaching and Learning Activities:

Lectures: during week, the theoretical and practical lectures will be presented throughout the semester; the discussion of practical work within lab will be organized and illustrated with activities.

Assignments: after the lectures, the assignment will be explained and given to students. It is expected to be done on weekly bases.

Quizzes: the contents of each lecture will be discussed during class for open question and answer to make sure every student will participate and active.

In class brainstorming sessions: provide students with enough sources and background knowledge briefly within the topics during class to top up their challenge packs to be more active.

CLASS REQUIREMENT

- A Scientific Calculator
- Notebook

***Note: Students must bring a notebook, a pen, notebook, calculator, and the periodic table to every class**

Assessment Tool	Description	Weight
Quizzes	Four Quizzes are scheduled as shown in the semester schedule. Students will take 4 quizzes; Three quiz grades will be counted toward your final grade (ABET A and E)	10%
Assignments	Three assignments will be conducted during the semester; each assignment will be given as scheduled and posted on Google Classroom(ABET A and E)	10%
Mid-term exam	Paper examination – all topics that were studied are included (ABET A and K)	20%
Final Exam	Examination questions-all topics that were studied during the semester are included (ABET A, E and K)	30%
Tests	Two tests will be conducted during the semester and each has 15% of the total grade. The test may include multiple-choice questions, True/False, short answers, and problem solving (ABET	30%

ESSENTIAL READINGS: (Journals, textbooks, website addresses etc.)

Textbooks:

1. Fundamentals of Natural Gas Processing, 2nd edition, Arthur Kidnay, William Parrish, Daniel McCartney, 2011.
2. Production Optimization Using NODAL TM Analysis by H. Dale Beggs
3. Surface Production Operations Volume 1 by Ken Arnold and Maurice Stewart

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References:

SPE technical papers in related subjects

COURSE POLICY *(including plagiarism, academic honesty, attendance etc)*

KUST Academic Policy
http://sar.komar.edu.iq/files/Student%20hand%20Book%202013.pdf

Attendance:

- Students are expected to attend all lectures and must attend all examinations, quizzes, and practical exercises.
- There is no make-up work for students who miss classes without official permission.
- Student must arrange with the faculty to make-up the missed class.
- Students are subject to the regulation and policies mentioned in the KUST Student Handbook.
- KUST guidelines for lateness are as follows: Three occasions of lateness count as one absence. (You can be considered late the first minute of the lecture time).

GUIDELINES FOR SUCCESS

1. Be able to work independently and in groups,
2. Pay-attention in the classes is the guarantee of success,
3. Extend your knowledge beyond the given textbooks in order to master the subject, and
4. Try not to miss the classes

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Course calendar: Please check the academic calendar for spring 2016

Week	Beg/End dates	Topics (Chapters)	Course Discussion	Assessment
1	FEB 28 – MAR 3	Introduction To Advanced Production Engineering	Introduction to Surface Production Operations	
2	MAR 6- MAR 10	Nodal Analysis	Reservoir Performance	
3	MAR 13- MAR 17	Nodal Analysis	Total System Analysis	ASSIGNMENT-1 (Chapter 1,2) (Deadline: 7 days from the date of announcement)
Nawroz Holidays MAR 20- MAR 24				
4	MAR 27- MAR 31	Separation Systems	Three phase separation	QUIZ-1 (Chapter 1,2)
5	April 3- April 7	Separation Systems	Separator Design Calculations	TEST-1 (Chapter 1,2,3)
6	April 10- April 14	Transportation Systems	Introduction to Petroleum Transportation methods by Truck and pipelines	Assignment-2 (Chapter 3,4) (Deadline: 7 days from the date of announcement)
7	April 17- April 22	Petroleum Refining Overview	Overall Refinery Flow	Quiz-2 (Chapter 4,5)
Midterm Exams April 22- April 30				
8	May 2- May 5	Refinery Products	Low-Boiling Products, Gasoline, Gasoline Specifications, Distillate Fuels, Jet and Turbine Fuels	
9	May 8- May 12	Refinery Feedstocks	Crude Oil Properties, Composition of Petroleum, Crudes Suitable for Asphalt Manufacture	Assignment-3 (Chapter 6) (Deadline: 7 days from the date of announcement)

10	May 15-May 19	Overview of separation & conversion technologies	Crude distillation complex, Coking, Other "bottom of the barrel" technologies	Quiz-3 (Chapter 6,7)
11	May 22-May 26	Overview of separation & conversion technologies	Catalytic cracking, Hydrotreating & hydrocracking	
12	May 29-June 2	Supporting Processes	Hydrogen Production and Purification, Gas Processing Unit	TEST-2 (Chapter 4,5,6)
13	June 5-June 9	Supporting Processes	Acid Gas Removal, Sulfur Recovery Processes	Quiz-4 (Chapter 6,7,8)
14	June 12-June 16	Health , Safety And Environment	Safety procedures followed at petroleum refinery	
15	June 19-June 23		Review of the Course	
Final Examination (June 24- July 02)				