

Ministry of Higher Education and Scientific research



Department of Chemical – Petrochemical Engineering

College of Engineering

University of Salahaddin - Hawler

**Subject: Petroleum Secondary Processing
Technology(PSPT)**

Course Book – Year – 4th, Semester – 7th

Lecturer's name: Mr. Serwan Ibrahim AbdulKhader

Academic Year: 2023- 2024

Course Book

1. Course name	PSPT
2. Lecturer in charge	Mr. Serwan Ibrahim Abdulkhader
3. Department/ College	Chemical and Petrochemical Engineering / Engineering
4. Contact	e-mail: Serwan.abdulkhader@su.edu.krd Tel: (optional)
5. Time (in hours) per week	Theory: 04 (Theoretical : 02 Tutorial 02) Practical: 0
6. Office hours	5 hours
7. Course code	
8. Teacher's academic profile	B.Sc. Chemical Engineering – 1996 M.Sc. Phase Equilibria – 2005 Worked as academic employment (University lecture) from 2007.
9. Keywords	Vacuum System , Vacuum Distillation , FCC units .
<p>10. Course overview:</p> <p>The course treats the basic methods used in chemical reactors types in refinery and elucidates the basics about the modelling of problem. Also treat the following general topics:</p> <ol style="list-style-type: none"> Covers an how to increase light fuel in refineries depending on chemical reaction information. Compare between the performance and the efficiencies of different units <ol style="list-style-type: none"> A theoretical weekly program of Four hours. A practical weekly program of zero hours. 	
<p>11. Course objective:</p> <ol style="list-style-type: none"> Acquire specialized knowledge in modelling the engineering problems and solve by new methods with good accuracy. Use the update advanced design equation and compare the results with the engineering analysis methods results Opportunity of deep analysis of selecting the most proper type of reactor . 	
<p>12. Student's obligation</p>	

For the student to achieve a level of excellence in the subject, the following items should be given utmost consideration:

- a. Class attendance on regular basis for learning.
- b. Active participation in class discussions.
- c. Reviewing the lecture notes and topics on weekly basis, noting the ambiguous points, if any, and requesting clarification during instructor office hours.
- d. Visiting the library on regular basis and checking the internet for other approaches or simplifications of topics and ideas.
- e. Giving adequate and sufficient priority to preparing for weekly, monthly and final tests.

13. Forms of teaching

Due to very equations and rules driving, the essence of teaching program is presented on white board. Sometimes, some explanations of details are prepared on MS power point. There are also assignments and seasonal projects appointed to individual students or groups that help the evaluation process and also support team work effort.

14. Assessment scheme

Attaining the requirements set to succeed in Mass Transfer – I, requires developing an engineer sense, relating to this topic, based on an emergent analytical and problem solving skills and memorizing topics can't secure success. In education system, the maximum mark is (100 %). The grading system is based on the summation of 2-categories of evaluations as:

- a. First, (40 %) of the mark is based on an academic semester effort of the student which includes but is not restricted to the following:
 - One examination (25 %), for which the study material is set for the topics reviewed in that particular semester.
 - Quizzes (5 % multiple by 2) = 10 %, for which the study material is limited and assigned by the instructor.

Active participation of the student in the classroom attendance, activities and discussions may be rewarded by the instructor for up to a limit not exceeding (5 %) as a general support margin, on the same basis for all of the students.

- b. Second, (60 %) of the mark is based on a final examination that is comprehensive for the whole of the study material reviewed during an academic semester and it usually occurs during the month of January of each year.

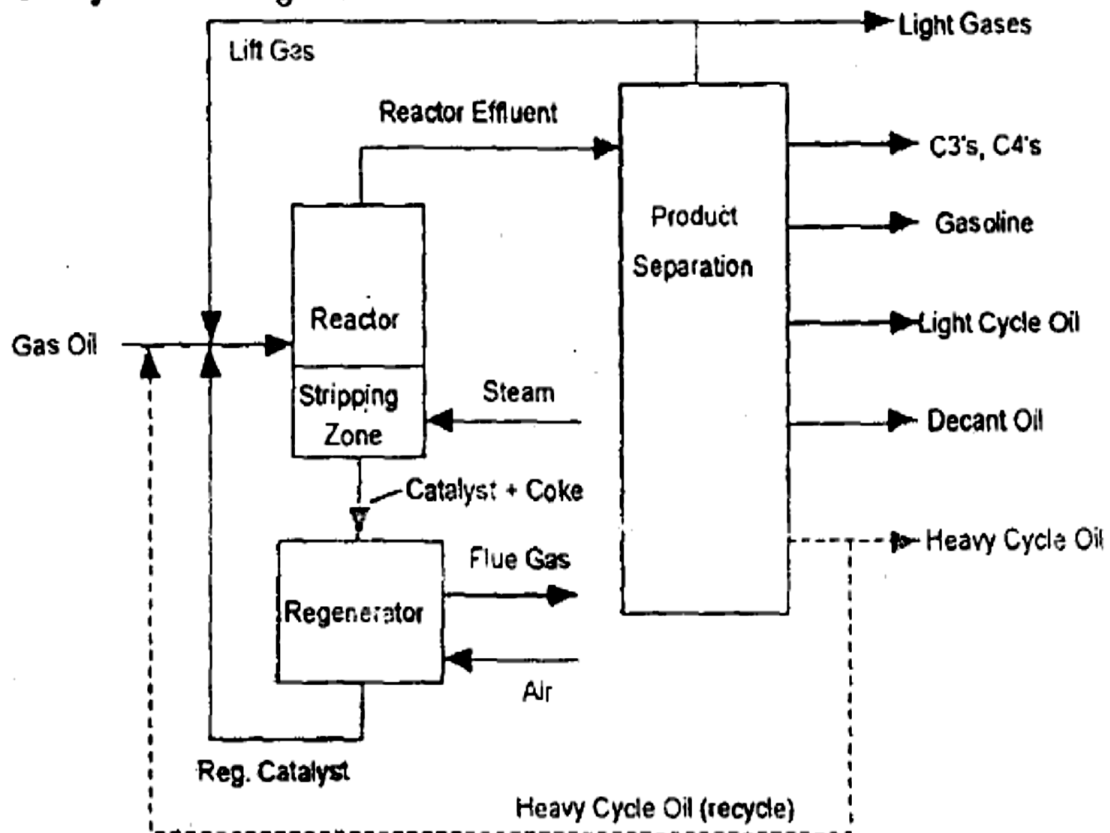
At the end of the evaluation process, if the students could not secure a minimum of (50 %), they are given a chance to repeat the final examination after

<p>two weeks and they should be able by then to equal or exceed the (50 %) limit otherwise they will have to repeat this subject during the next academic year if it did not contradict with the administrative regulations.</p>	
<p>15. Student learning outcome: Upon completion of the subject, students will be able to: a. Obtain fundamental knowledge in the area of modes of stoichiometry and chemical reactor design . b. Apply their knowledge, skills and hand-on experience to the analysis of effect of multiple reaction on selection of reactor c. Extend their knowledge of chemical engineering to different situations of engineering context and professional practice in Transforming Phenomenon. d. Recognize the need for and an ability to engage in life-long learning.</p>	
<p>16. Course Reading List and References: 1. - Principles of Chemical Reactor Analysis And Design, Second Edition, John Wiley & Sons, Inc., Hoboken, New Jersey, 2009.</p>	
17. The Topics:	Lecturer's name
Chapter One – <u>Vacuum Systems</u>	Mr. Serwan Ibrahim Aljaff
1.1 Introduction	
1.2 Vacuum Units	
1.3 Conversion between Mass Flow, Actual Volume Flow, and Standard Volume Flow	
Chapter Two – <u>Comparison of Vacuum Equipment</u>	
2.1 Vacuum Jets	
Chapter Three - <u>How Jets Work,</u>	
3.1 The Converging-Diverging Ejector	
3.2 Interaction of Steam Nozzle with Converging-Diverging Diffuser	
3.3 Compression Ratio	
Chapter Four – <u>Converging-Diverging Ejector</u>	
4.1 Velocity Boost	
4.2 Surging	

4.3 Critical Discharge Pressure	
4.4 Jet Discharge Pressure	
Chapter Five – <u>Vacuum Distillation</u>	
Chapter six – <u>Catalytic Cracking:</u>	
Chapter seven – Hydrocracking and Hydrotreating	
Chapter eight – Catalytic Reforming	

19. Examinations:

Catalytic Cracking Process



20. Extra notes:	
<p>Due to a number of unforeseen reasons that may lead to shifting of the academic year program, it may be subjected to modifications. Also extra curriculum hours may be needed to cover all the topics. The students shall be notified of the changes if and when they may occur.</p>	
21. Peer review	پیداچونہوہی ہاوہل