

## Industrial Processes (PTAC 1354)



**Credit:** 3 semester credit hours (3 hours lecture)

**Prerequisite/Co-requisite:** PTAC 2420 and SCIT 1494

### Course Description

The study of the common types of industrial processes.

### Required Textbook and Materials

1. Petroleum Refining, Fourth Edition, Leffler
  - a. ISBN number is 978-1-59370-158-1
2. Oil & Gas Production Handbook, free online textbook
  - a. [https://library.e.abb.com/public/34d5b70e18f7d6c8c1257be500438ac3/Oil%20and%20gas%20production%20handbook%20ed3x0\\_web.pdf](https://library.e.abb.com/public/34d5b70e18f7d6c8c1257be500438ac3/Oil%20and%20gas%20production%20handbook%20ed3x0_web.pdf)

### Course Objectives

Upon completion of this course, the student will be able to:

1. Describe processes and operations typical to the processing industry.

### Course Outline

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| <p>A. Oil &amp; Gas Production</p> <ol style="list-style-type: none"><li>1. Introduction</li><li>2. Exploration</li><li>3. Production</li><li>4. Upstream Process Sections</li><li>5. Midstream</li></ol> <p>B. Petroleum Refining</p> <ol style="list-style-type: none"><li>1. The Evolution of Petroleum Products</li><li>2. From the Oil patch to the refinery</li><li>3. Crude Oil Characteristics</li><li>4. Distilling</li><li>5. Vacuum Flashing</li></ol> | <ol style="list-style-type: none"><li>6. The Chemistry of Petroleum</li><li>7. Refinery Gas Plants</li><li>8. Cat Cracking</li><li>9. Alkylation</li><li>10. Catalytic Reforming</li><li>11. Hydrocracking</li><li>12. Isomerization</li><li>13. Residue Reduction</li><li>14. Gasoline</li><li>15. Distillate and Residual Fuels</li><li>16. Ethylene Plants</li><li>17. Solvent Recovery of Aromatics</li></ol> |
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### Grade Scale

90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
0 – 59	F

## **Course Evaluation**

Final grades will be calculated according to the following criteria:

Assignments	10%
Test	50%
Final Exam	40%

## **Course Requirements**

1. Calculate temperature conversions
2. Calculate Specific and API gravities
3. Demonstrate knowledge of Upstream, Refinery and Chemical plant processes
4. Explain requirements for gasoline, jet fuel and diesel engines.

## **Attendance Policy**

1. Missing more than 20% of classes will result in an automatic “F” for the course.
2. Absences are counted for unexcused, excused and coming to class late.
3. Missing more than 20% of a class period will count as an absence.
4. Being tardy 2 times equals 1 absence.

## **Course Policies**

1. No food, drinks, or use of tobacco products in class.
2. Beepers, telephones, headphones, and other electronic devices must be turned off while in class.
3. Do not bring children to class.
4. Assignments submitted late will be reduced 10 points each day.
5. If a test is missed due to an emergency situation, the student will have one week to make it up; otherwise a grade of 0 will be assigned. Students are responsible for scheduling the make-up date.
6. No cheating of any kind will be tolerated. Students caught cheating or helping someone to cheat can and will be removed from the class for the semester. Cheating can result in expulsion from LIT.
7. A student who wishes to drop a course is responsible for initiating and completing the drop process. A student who stops coming to class, and fails to drop the course, will earn an “F” in the course.

### Student Code of Conduct Statement

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the LIT Catalog and Student Handbook. The LIT Catalog and Student Handbook may be accessed at [www.lit.edu](http://www.lit.edu) or obtained in print upon request at the Student Services Office.

### Disabilities Statement

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409) 880-1737 or visit the office in Student Services, Cecil Beeson Building.

<http://www.lit.edu/depts/stuserv/special/default.aspx>

### Course Schedule (subject to change)

Online Week	Topic	Reference
1	Course introduction and policies <i>Oil &amp; Gas Production Handbook</i> <ul style="list-style-type: none"><li>• Introduction</li><li>• Exploration</li><li>• Production</li><li>• Upstream Process Sections</li><li>• Midstream</li></ul>	Text: pg. 1-18
2	<i>Petroleum Refining Textbook</i> Crude Oil Characteristics	Text: pg. 1-24 (Ch. 1,2,3)
3	Distilling Vacuum Flashing	Text: pg. 25-48 (Ch. 4,5)
4	The Chemistry of Petroleum	Text: pg. 49-56 (Ch 6) <b>TEST #1</b>
5	Refinery Gas Plants	Text: pg. 57-66 (Ch 7)
6	Cat Cracking	Text: pg. 69-80 (Ch 8)
7	Alkylation	Text: pg. 81-88 (Ch 9)
8	Cat Reforming	Text: pg 89-100 (Ch 10) <b>TEST #2</b>

PTAC 1354  
Course Syllabus

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9	Hydrocracking	Text: pg 101-106 (Ch 11)
10	Isomerization	Text: pg 107-111 (Ch 12)
11	Residue Reduction	Text: pg 113-123 (Ch 13)
12	Gasoline	Text: pg 125-146 (Ch 14) <b>TEST #3</b>
13	Distillate and Residual Fuels	Text: pg 147-155 (Ch 15)
14	Ethylene Plants	Text: pg 187-192 (Ch 19)
15	Solvent Recovery of Aromatics	Text: pg 207-211 (Ch 21) <b>Test-4</b>
16	Final Exam	Comprehensive

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