Industrial Process (PTAC 1354)

Credit: 3 semester credit hours (3 hours lecture)

Prerequisite/Co-requisite: PTAC 2420, SCIT 1494

Course Description

The study of the common types of industrial processes. Types of commercial processes will be explored and demonstrated.

Required Textbook and Materials

a. New course – Please check with your Instructor

Course Objectives

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

1. Explain reactions and operations of industrial processes.
2. Explain chemical, physical and thermodynamic principles of Industrial processes
3. Perform calculations of industrial processes including gravities and temperatures.

Course Outline

A. Petroleum Refining

1. The Evolution of Petroleum Products acuum Flashing
2. From the Oil patch to the refinery
3. Crude Oil Characteristics
4. Distilling
5. Vacuum Flashing
6. The Chemistry of Petroleum
7. Refinery Gas Plants
8. Cat Cracking
9. Alkylation
10. Catalytic Reforming
11. Hydrocracking
12. Isomerization
13. Residue Reduction
14. Gasoline
15. Distillate and Residual Fuels

B. Petrochemicals

Organic Chemistry

1. Benzene
2. Toluene and the xylenes
3. Cyclohexane
4. Olefin Plants
5. The C4 Hydrocarbon Family
6. Ethylene Oxide and Ethylene Glycol
7. Propylene Oxide and Propylene Glycol
8. Methanol and Synthesis Gas
9. Other Alcohols
10. Higher Alcohols
11. Surfonics by Batch Operations

PTAC 2371
Course Syllabus

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:

Classroom	15%
Exams	70%
Final Exam	15%

Course Requirements

1. Calculate temperature conversions
2. Calculate Specific and API gravities
3. Demonstrate knowledge of 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 3 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.

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.

Course Schedule

Week	Topic	Reference
1	Course introduction and policies Crude Oil characteristics • Lecture	Chapters 1,2,3
2	Distillation and Vacuum Flashing And Chemistry • Lecture	Chapter 4,5,6
3/4	Refinery Gas Plants and Catalytic Cracking • Lecture	Chapter 7,8 Test-1
5/6	Alkylation and Cat reforming And Hydrocracking	Chapter 9,10,11
7/8	Isomerization, and Residue Reduction Gasoline and Diesel • Lecture	Chapter 12 ,13 Chapter 14,15
9/10	Organic Chemistry and Benzene, Toluene, and Xylene	Test-2 Chapter 1,2,3
11/12	Olefin Plants, Cyclohexane, And C4 Hydrocarbons • Lecture	Chapters 4,5,6 Test-3
13	Ethylene oxide, Ethylene glycol, Propylene Oxide,Propylene Glycol Methanol and Ammonia	Chapter 10,11,12

	• Lecture	
14/15/16	Other Alcohols, Higher Alcohols, Surfonics	Chapter 14,15 Handout Test-4 Final Comprehensive