Introduction to Process Technology (PTAC 1302)

Credit: 3 semester credit hours (3 hours lecture)

Prerequisite/Co-requisite: None

Course Description
An introduction overview of the processing industries.

Required Textbook and Materials
1. *Introduction to Process Technology*, Pearson Custom Publishing
   a. ISBN number is 978-0-13-700414-0
2. Equipment (To be purchased by the student)
   a. hardhat
   b. safety glasses
   c. shoes (no open toes/sandals)

Course Objectives
Upon completion of this course, the student will be able to:
1. Describe the roles, responsibilities, safety, environmental, and quality concepts associated with the work environment of a process technician.
2. Identify basic processes, equipment and systems.
3. Define and apply terms and symbols needed in the processing industry.

Course Outline
A. Introduction
   1. Introduction of faculty and students
   2. Review Syllabus
   3. Review Class Policies
B. Process Technology- Overview
   1. Process industries
   2. Process technology
   3. Operator duties.
C. Oil and Gas Industry
   1. History of oil and gas industry.
   2. Duties of oil and gas operator.
   3. Role of operator.
D. Chemical Industry
   1. History of chemical industry.
   2. Duties of chemical operator.
   3. Role of chemical operator.
E. Other Types of Industry using Process Operators
   1. Description of other processes.
   2. Duties of operators.
   3. Role of operator.
F. Chemistry and Physics
   1. Relationships of physical properties of matter to the process industry.
   2. Application of chemistry to the petrochemical industry.
G. SHE, Quality Terms, and Process Drawings
   1. Safety, Health, Environmental hazards found in process industries.
   2. Quality issues in a process industry
   3. Workforce diversity and its impact on the workplace.
   4. P&ID"S and their use.
H. Piping and Valves, Pumps, Compressors
   1. The purpose of piping and vessels.
   2. The purpose and function of pumps in the process industry.
   3. The purpose and function of compressors in the process industry.
I. Turbines, Electricity and Motors

1. Purpose and function of steam turbines in the process industry.
2. Purpose and function of electric motors in the process industry.

J. Heat Exchangers and Cooling Towers
1. Purpose and function of heat exchangers in the process industry.
2. Purpose and function of cooling towers in the process industry.

K. Furnaces and Boilers
1. Purpose and function of fired heaters in the process industry.
2. Purpose and function of boilers in the process industry.

L. Distillation
1. Types and functions of distillation units.
2. Process of distillation in relationship to finished products.

M. Process Utilities and Axillaries
1. The different process utilities and their relationships to process production.
2. The purpose and function of flare, refrigeration, lubrication, and hot oil systems.

N. Instrumentation
1. Process instrumentation, their purpose and their function.

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:

Homework	10%
Tests	50%
Final	40%

Course Requirements

1. Read chapters as assigned.
2. Answer questions at the end of each chapter.
3. Identify equipment shown in lab associated with subject matter
4. Have a calculator and be able to use it.

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.

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.

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 or obtained in print upon request at the Student Services Office.

Course Schedule

Week	Topic	Reference
1/2	Course introduction and policies.	Handouts & Textbook (chapters 1-9)
3	Basic Physics	Chapter 10
4	Basic Chemistry **TEST 1**	Chapter 11
5	S.H.E.,Quality, Teams, P&ID's	Chapter 12,13,14,15
6	Review	Textbook
7	Piping & Valves**TEST 2**	Chapter 16
8	Vessels,Pumps and Compressors	Chapter 17,18,19

9	Review **TEST 3**	Textbook
10	Turbines,Electricity& Motors	Chapter 20,21
11	Heat Exchangers, Cooling Towers REVIEW	Chapter 22,23
12	Frurnaces, Boilers **TEST 4**	Chapter 24,25
13	Distillation REVIEW	Chapter 26
14	Process utilities **TEST 5**	Chapter 27
15	Process Auxiliaries	Chapter 28
16	Instrumentation **TEST 6**	Chapter 29
17	Finals Week	Chapters 1- 27