Process Troubleshooting (PTAC 2446)

Credit: 4 semester credit hours (3 hours lecture, 3 hours lab)

Prerequisites: PTAC 2438

Course Description
Instruction in the different types of troubleshooting techniques, procedures, and methods used to solve process problems.

Required Textbook and Materials
2. Equipment (To be purchased by the student)
   a. Nomex or fire-retardant clothing
   b. hardhat
   c. safety glasses
   d. gloves
   e. shoes (no open toes/sandals)

Course Objectives
Upon completion of this course, the student will be able to:
1. Collect data and identify techniques for troubleshooting.
2. Utilize applicable troubleshooting methods to solve process problems.

Course Outline
A. Introduction
   1. Introduction of faculty and students
   2. Review Syllabus
   3. Review Class Policies
   4. Review Lab Policies

B. Preparation for Process Troubleshooting
   1. Introduction and performance Objectives
   2. Process Variables
   3. Process Instruments
   4. Process Instruments and Controllers
   5. Trouble shooting with controllers
   6. Troubleshooting tools
   7. Troubleshooting Steps

C. Troubleshooting a Decanter Process
   1. Introduction and Performance Objectives of Decanter Systems
   2. Decanter System Description
   3. Factors that Affect a Decanter System
   4. Decanter System Operation
   5. Decanter System Equipment and Instrument Lists
6. Normal Decanter System Conditions
7. Troubleshooting a Decanter System

D. Troubleshooting a Reaction Process
1. Introduction and Performance Objectives of Reaction Systems
2. Reaction System Description
3. Factors that Affect a Reaction System
4. Reaction System Operation
5. Reaction System Equipment and Instrument Lists
6. Normal Reaction System Conditions
7. Troubleshooting a Reaction System

E. Troubleshooting a Steam Generation Process
1. Introduction and Performance Objectives of a Steam Generation Process
2. Steam Generation Process System Description
3. Factors that Affect a Steam Generation Process
4. Steam Generation Process Operation
5. Steam Generation Process Equipment and Instrument Lists
6. Normal Steam Generation Process Conditions
7. Troubleshooting a Steam Generation Process

F. Troubleshooting a Distillation Process
1. Introduction and Performance Objectives of a Distillation Process
2. Distillation Process Description
3. Factors that Affect a Distillation Process
4. Distillation Process Operation
5. Distillation Process Equipment and Instrument Lists
6. Normal a Distillation Process Conditions
7. Troubleshooting a Distillation Process

G. Troubleshooting an Absorption and Stripping Process
1. Introduction and Performance Objectives of an Absorption and Stripping Process
2. Absorption and Stripping Process Description
3. Factors that Affect an Absorption and Stripping Process
4. Absorption and Stripping Process Operation
5. Absorption and Stripping Process Equipment and Instrument Lists
6. Normal Absorption and Stripping Process Conditions
7. Troubleshooting an Absorption and Stripping Process

Grade Scale

<table>
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<th>Score Range</th>
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<td>90 – 100</td>
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<td>80 – 89</td>
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<td>0 – 59</td>
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PTAC 2446
Course Syllabi

Course Evaluation
Final grades will be calculated according to the following criteria:

<table>
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<tr>
<th>Activity</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework/Labs</td>
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<tr>
<td>Quizzes</td>
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<td>Exams</td>
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<tr>
<td>Final Exam</td>
<td>40%</td>
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Course Requirements
1. Learn and apply the tools, steps, and methods for Process Troubleshooting.
2. Operate, equipment and instrumentation, normal data, and factor associated with a Decanter System.
3. Operate, objectives, equipment and instrumentation, normal data, and factor associated with a Reaction System.
4. Operate, objectives, equipment and instrumentation, normal data, and factor associated with a Waste Heat Generation System.
5. Operate, objectives, equipment and instrumentation, normal data, and factor associated with a Distillation System.
6. Operate, objectives, equipment and instrumentation, normal data, and factor associated with an Absorption System.
7. Operate, objectives, equipment and instrumentation, normal data, and factor associated with a Stripping System.

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.

**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.

**Course Schedule**

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<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Course introduction and policies</td>
<td>Handouts</td>
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<td>• Lecture</td>
<td>Chapter 1</td>
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<td>• Introduction and performance Objectives</td>
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<td>2</td>
<td>• Process Variables</td>
<td>Chapter 1</td>
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<td>• Process Instruments</td>
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<td>• Process Instruments and Controllers</td>
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<td>3/4</td>
<td>• Trouble shooting with controllers</td>
<td>Chapter 1</td>
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<td>5/6</td>
<td>• Introduction and Performance Objectives of Decanter Systems</td>
<td>Chapter 2</td>
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<tr>
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<td>• Decanter System Description</td>
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<td>5</td>
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<td></td>
<td>Exam I</td>
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7/8  
- Introduction and Performance Objectives of Reaction Systems  
- Reaction System Description  
- Factors that Affect a Reaction System  
- Reaction System Operation  
- Reaction System Equipment and Instrument Lists  
- Normal Reaction System Conditions  
- Troubleshooting a Reaction System  
- Chapter 3

9/10  
- Introduction and Performance Objectives of a Steam Generation Process  
- Steam Generation Process System Description  
- Factors that Affect a Steam Generation Process  
- Steam Generation Process Operation  
- Steam Generation Process Equipment and Instrument Lists  
- Normal Steam Generation Process Conditions  
- Troubleshooting a Steam Generation Process  
- Exam II  
- Chapter 4

11/12  
- Introduction and Performance Objectives of a Distillation Process  
- Distillation Process Description  
- Factors that Affect a Distillation Process  
- Distillation Process Operation  
- Distillation Process Equipment and Instrument Lists  
- Normal a Distillation Process Conditions  
- Troubleshooting a Distillation Process  
- Chapter 5

13/14  
- Introduction and Performance Objectives of an Absorption and Stripping Process  
- Absorption and Stripping Process Description  
- Factors that Affect an Absorption and Stripping Process  
- Chapter 6

5
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