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Uttyler.edu/engineering

MENG 5340 – Advanced Topics in Mechanical Engineering
Course Syllabus

Semester / Year	Spring 2025
Catalog Description	Special Topics this semester is designed from student and alumni feedback. This term, we will focus on basics of Promax simulation as well as learning the basics of process instrumentation. We will cover measurement instruments for level, flow, temperature and pressure, as well as design of motors, alarms, valves, actuators and regulators. We will introduce diagramming, design equations, rules of thumb, building standards and end with Promax instrumented simulations.
Prerequisites	Instructor approval.
Section Number	001
Instructor Name	Dr. Carla Lacerda
Contact Information	3900 University Blvd., RBN 3005, Tyler TX. 75799 Phone: 903-565-6489 - Email: clacerda@uttyler.edu
Class Type / Instruction Mode / Location	001: Lecture / f-2-f / RBN 1034
Class Time	001: T-Th 3:30 – 4:50 PM
Office Hours	Mo/We 10 – 11 AM and Th 2 – 3 PM or by appointment.
No. of Credits	3
Required Textbook	None.
Optional References	Lecture notes on Canvas.
Additional Rules and Requirements	This course allows the use AI tools (such as ChatGPT and Copilot) only in report writing. Students will be notified as to when and how these tools will be used, along with guidance for attribution. Using AI tools outside of these parameters violates UTTyler's Honor Code, constitutes plagiarism, and will be treated as such.
Evaluation Method	Homework: 12%; Participation: 3%; Exams: 50%; Group Simulation: 15%, Group Projects: 20%

<table>
<tr><td>Grading Policy / Scale</td><td>Letter grades, scale:
A: 90 – 100, B: 80 – 89, C: 60 – 79, D: 30 – 59, F: < 30</td></tr>
<tr><td>Important Events / Dates</td><td>1/27/2025 (Mo): Census Date.
2/18/2025 (Tu): 1st Exam.
3/31/2025 (Mo): Last day to withdraw from one or more classes.
4/22/2025 (Tu): 2nd Exam.</td></tr>
<tr><td>Attendance / Makeup policy / other rules</td><td>1. Lecture attendance is required unless approved by the instructor.
2. Make-up assignment(s) require instructor's approval prior to theevent.
3. All assignments must be submitted to Canvas for grading.
4. Students with SAR status should contact the UT Tyler Office of Student for accommodations.</td></tr>
<tr><td>Course Learning Objectives / ABET & PEOs Relation</td><td>By the end of this course, students will be able to:
1. Introduce students to Promax process simulations
2. Introduce measuring instrumentation
3. Apply design principles to size instrumentation
4. Design safety valves and other safety instruments
5. Introduce the basics of alarms and electric instrumentation</td></tr>
<tr><td>Tentative Topics / Course Plans</td><td>Proposed Schedule – may be subject to change:
<table>
<tr><th>Weeks</th><th>Dates</th><th>In class</th><th>Due on Canvas and/or in class</th></tr>
<tr><td>Week 1</td><td>14-Jan</td><td>Syllabus + Expectations</td><td></td></tr>
<tr><td></td><td>16-Jan</td><td>Intro to Promax – basic simulations</td><td></td></tr>
<tr><td>Week 2</td><td>21-Jan</td><td>Intro to Promax – basic simulations</td><td></td></tr>
<tr><td></td><td>23-Jan</td><td>Intro to Promax – basic simulations</td><td></td></tr>
<tr><td>Week 3</td><td>28-Jan</td><td>Intro to Promax – scenario optimization</td><td></td></tr>
<tr><td></td><td>30-Jan</td><td>Intro to Promax – student simulations</td><td></td></tr>
<tr><td>Week 4</td><td>4-Feb</td><td>Level and flow</td><td>Present group simulations</td></tr>
<tr><td></td><td>6-Feb</td><td>Pressure</td><td></td></tr>
<tr><td>Week 5</td><td>11-Feb</td><td>Temperature and heat</td><td></td></tr>
<tr><td></td><td>13-Feb</td><td>Valve design</td><td></td></tr>
<tr><td>Week 6</td><td>18-Feb</td><td>Valve design</td><td>HW1</td></tr>
<tr><td></td><td>20-Feb</td><td>No class</td><td></td></tr>
<tr><td>Week 7</td><td>25-Feb</td><td>Safety valves</td><td></td></tr>
<tr><td></td><td>27-Feb</td><td>Safety valves</td><td></td></tr>
<tr><td>Week 8</td><td>4-Mar</td><td>Midterm exam I</td><td></td></tr>
<tr><td></td><td>6-Mar</td><td>Actuators and regulators</td><td>HW2</td></tr>
<tr><td>Week 9</td><td>11-Mar</td><td>Actuators and regulators</td><td></td></tr>
<tr><td></td><td>13-Mar</td><td>Safety and alarms</td><td></td></tr>
<tr><td>Week 10</td><td>25-Mar</td><td>Safety and alarms</td><td></td></tr>
<tr><td></td><td>27-Mar</td><td>Motors and motion</td><td>HW3</td></tr>
<tr><td>Week 11</td><td>1-Apr</td><td>Motors and motion</td><td></td></tr>
<tr><td></td><td>3-Apr</td><td>Electrical instruments and conditioning</td><td></td></tr>
<tr><td>Week 12</td><td>8-Apr</td><td>Electrical instruments and conditioning</td><td></td></tr>
<tr><td></td><td>10-Apr</td><td>Signal transmission</td><td></td></tr>
<tr><td>Week 13</td><td>15-Apr</td><td>P&ID drawings</td><td>HW4</td></tr>
<tr><td></td><td>17-Apr</td><td>P&ID drawings</td><td></td></tr>
<tr><td>Week 14</td><td>22-Apr</td><td>Midterm exam II</td><td></td></tr>
<tr><td></td><td>24-Apr</td><td>Presentations</td><td>Present group projects</td></tr>
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<tr><td>University Policies</td><td>https://www.uttyler.edu/offices/academic-affairs/files/syllabus-information.pdf</td></tr>
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