University of North Texas
College of Engineering
Department of Engineering Technology (ETEC)

MSET 5310 Industrial Process Control

Catalog 17-18  Classical feedback control design and applications for continuous- and discrete-time dynamical systems used to model industrial processes. Topics include transfer-function modeling, sampling, and frequency-domain controller designs using modern computer-based simulation software. Prerequisite(s): ELET 4720 (or equivalent) and MSET 5040.

Lab Use  This course provides opportunities for students to take advantage of various software and hardware packages such as Matlab/Simulink, and NI/Quanser, supported by the department in the classroom or in lab experiments, in simulation studies, homework assignments, or in projects.

Text  Lecture Notes provided

Instructor  Enrique Barbieri, Ph.D
Professor, Engineering Technology Office Hours: WR 3:00-4:00 pm or by appointment (F115)

LEARNING OUTCOMES

Students will demonstrate an advanced ability to:

- Work with mathematical models of electrical, mechanical, electromechanical and other industrial processes using the Laplace and Z-Transforms and other tools
- Analyze stability and steady-state performance of systems before and after feedback
- Use modern simulation software packages in the analysis and design of feedback control systems
- Design and build compensators to achieve performance requirements

CLASS POLICIES

1. Syllabus updates. Announced changes may be made to this syllabus during the semester.
2. Academic Dishonesty. The UNT policies on academic dishonesty will be enforced. It is the students’ duty to protect their work so it is not available to others for submission as their efforts. Students who knowingly allow others to use their work are partners in this unethical behavior. The use of computing, communication, or other electronic devices may be disallowed during class and/or exams. The Instructor also has the discretion to assign a failing grade to portions of an assessment, a whole assessment, or the whole course depending on the severity of the event.
3. ADA Accommodations. Students in need of academic accommodations for disability can refer to the UNT Policy manual for initiating the required arrangements based on ADA terms.
4. Course evaluations are a requirement for all organized classes at UNT. This survey will be made available at the end of the semester, providing you a chance to comment on how this class is taught. I am very interested in the feedback I receive from students, as I work to continually improve this course and my teaching. I consider this evaluation to be an important part of your input to this class.
5. No late work/makeups will be considered. An exception requires a sound and verifiable excuse. Examples of unacceptable excuses: my alarm did not go off; my PC has a virus.
On Work and Academics “Work, sleep, friends – choose two (author unknown)”
A typical 3-credit graduate class, meeting 3 hours per week, may require on average about 6-9 hours of work per week that includes

- reading/catching up from the previous class and revising notes;
- preparation for the next class meeting, that is, reading ahead and formulating questions;
- solving additional practice problems;
- preparing for lab work (for example, pre-lab designs) and writing lab reports (applicable to courses with a lab component); and
- taking care of homework assignments.

Hence, a graduate student taking a load of say 9 credits (three 3-credit classes) requires on average about 20-30 hours of academic work per week. If you are a full-time TA or RA which requires a commitment of 20 hours per week, then you are considered a full-time graduate student committing about 40-50 hours per week leaving time for socializing and no time for other part-time work; this is why it is called a full-time load. You may still be expected to do research to complete a Project or a Thesis even without a formal TA/RA appointment. Trying to fit a full-time or even a substantial part-time job always takes a toll especially during exams and project due-dates. My advice is that your academic load needs to be carefully balanced with all other non-academic activities, and accept the fact that if you work, then you must be a part-time student.

Grading & Instructor’s Expectations:
Students are expected to attend every class. The student’s abilities will be demonstrated via homework, projects, quizzes, exams, and lab projects. A final exam and at least two semester exams will be scheduled. Successful students attempt to solve many more problems than those assigned for credit to develop the practice and the necessary skills. Homework is due at the start of class (unless otherwise specified) at which time solutions may be distributed and discussed. You are encouraged to work in groups and learn from each other. Individual work must be turned in for grading. You are responsible for understanding the techniques; avoid simply copying the group’s work as this practice typically results in disaster during the exams. Typically, students earn a very good Homework grade; however, quizzes and exams will give you the opportunity to demonstrate your individual understanding of the course material.

**HOMEWORK** Assuming that problems are clearly stated and their solution presented in a professional manner (no scratch work should be turned in) on 8½ paper, single-sided, your name, course and assignment number written at the top of the first page, **THEN:**

- All problems correct: 10 pts
- Few minor algebra mistakes leading to incorrect answers: 7 – 9 pts
- Several algebra mistakes or conceptual errors leading to incorrect answers: 4 – 6 pts
- Missing or wrong assignment problems, or non-compliance with format: 0 – 4 pts

Final Grading:
To earn an “A” (above 90%) the student does outstanding work demonstrating excellence in his/her understanding of the course material as shown by performance. To earn a “B”, (above 80%) the student demonstrates good performance to earn graduate credit. A grade of “C” or lower is in general a failing grade; a grade of “D” is not accepted for credit and the course or equivalent or substitute needs to be retaken.
Cumulative Points & Weights:
The table below lists all possible items that earn points toward the final grade and the equivalent % weight. The actual total number of points may be less than the maximum depending on the number of items assigned:

<table>
<thead>
<tr>
<th>Item</th>
<th>Points (max)</th>
<th>%</th>
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<tbody>
<tr>
<td>Homework</td>
<td>50</td>
<td>10</td>
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<tr>
<td>Project</td>
<td>100</td>
<td>20</td>
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<tr>
<td>Tests, Quizzes</td>
<td>200</td>
<td>40</td>
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<tr>
<td>Final test</td>
<td>150</td>
<td>30</td>
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<tr>
<td>Total (max)</td>
<td>500</td>
<td>100</td>
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<tr>
<td>Demonstrated Participation/Progress/Improvement (Instructor’s discretion)</td>
<td>50</td>
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Summary of Calendar FALL 2017
http://catalog.unt.edu/content.php?catoid=17&navoid=1737&hl=calendar&returnto=search#fall_2017

Final Exam Schedule – Discovery Park http://registrar.unt.edu/exams/final-exam-schedule/fall

Final Exam on Dec 14, 1:30 – 3:30