

# EENG 4308: Automatic Control Systems

## Spring 2026 Syllabus

### Instructor Information:

Premananda Indic, PhD  
Department of Electrical Engineering,  
The University of Texas at Tyler,  
Office: RBN 2010,  
Phone: 903-566-6208,  
email: pindic@uttyler.edu (preferred)

### Office Hours:

Monday : 11:30AM to 1:00PM  
Wednesday : 11:30AM to 1:00PM  
Additional Hours : By appointment

### Course Description:

This course covers the fundamentals of automatic control systems; mathematical models of physical systems; block diagrams and signal flow graphs; transient and steady state responses; P, PI, PD, and PID controllers; stability of linear feedback systems; root-locus and Routh's criteria; frequency response methods; Nyquist and Bode plots; stability margins; state-variable formulation of dynamic systems.

The student course learning objectives are given in the syllabus

### Recommended Textbook:

Richard Dorf and Robert Bishop, Modern Control Systems, 13th ed., Prentice-Hall, 2016.

### Evaluation and Grading:

The course grade will be based on the following activities:

#### 1. Tests (60%):

There will be four tests as given in the outline. There will be a grade replacement policy. For example, if your Test 2 grade is better than Test 1, then Test 1 grade will be replaced with the Test 2. This approach will be followed for other tests. For Test 4, minimum score that you will earn is the average of previous three tests.

**It is important that you should attend ALL tests and score at least 50% of grades in every test to be eligible for grade replacement policy.** If you did not score 50% in any of the tests, your grades will not be replaced.

All tests and final exams are CLOSED books and notes; however, a cheat sheet is allowed.

#### 2. Homework (20%)

There will be four homework assignments.

**3. Final Exam (20%):**

Final exam as per University Schedule. Open books and notes.

|                                  |   |
|----------------------------------|---|
| 90% and above:                   | A |
| 80% and above and less than 90%: | B |
| 70% and above and less than 80%: | C |
| 60% and above and less than 70%: | D |
| Below 60%:                       | F |

Students are encouraged to read the academic honesty policy (Student Standards of Academic Conduct).

**Course Outline:**

| <b>Schedule</b>                   | <b>Topics</b>                                 | <b>Assignments</b>         |
|-----------------------------------|---|----------------------------|
| Week 1:<br>(Jan 12-Jan 17)        | Introduction to Control Systems               | Review Syllabus            |
| Week 2:<br>(Jan 19-Jan 24)        | Mathematical Models of Systems                |                            |
| Week 3:<br>(Jan 26-Jan 31)        | State Variable Models                         | HW1 due on 1/28/26         |
| Week 4:<br>(Feb 2-Feb 7)          | Feedback Control System Characteristics       | Test 1 on 2/4/26           |
| Week 5:<br>(Feb 9- Feb 14)        | Performance of Feedback Control Systems       |                            |
| Week 6:<br>(Feb 16 – Feb 21)      | The Stability of Linear Feedback Systems      | HW 2 due on 2/18/26        |
| Week 7:<br>(Feb 23 – Feb 28)      | The Root Locus Method                         |                            |
| Week 8:<br>(March 2 – March 7)    | Frequency Response Method                     | Test 2 on 3/4/26           |
| Week 9:<br>(March 16 – March 21)  | Stability in the Frequency Domain             |                            |
| Week 10:<br>(March 23 – March 28) | Stability in the Frequency Domain             | HW3 due on 03/25/26        |
| Week 11:<br>(March 30 - April 4)  | Design of Feedback Control Systems            | Test 3 on 4/1/26           |
| Week 12:<br>(April 6 – April 11)  | The Design of State Variable Feedback Systems |                            |
| Week 13:<br>(April 13 – April 18) | Robust Control Systems                        | HW4 due on 04/15/26        |
| Week 14:<br>(April 20 – April 25) | Review  | Test 4 on 4/22/26          |
| Week 15:<br>(April 27 – May 2)    | Final Exam                                    | As per university schedule |

