



FACULTY OF ENGINEERING
DEPARTMENT OF ENERGY ENGINEERING

Syllabus for
ENU 403 Control System Analysis

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Faculty	Engineering	Department	Energy Engineering
Course Code & Number	ENU 403	Course Title	Control System Analysis
Level of Course	BSc	Course Credit Hours / ECTS	(3+0+0) 3 / 4 ECTS
Time Schedule	(Wednesday) 09:30 - 12:15		

Text Book and Reference Books	<p><i>Text Book:</i> R.C. Dorf and R.H.Bishop, "Modern Control Systems" 12th and 13th Edition, Prentice Hall, 2001.</p> <p><i>Reference Books:</i> 1) K. Ogata, "Modern Control Engineering" 3rd Edition, Prentice Hall, 1997 2) N.S. Nise, "Control Systems Engineering," 4th and 6th Edition, 2010 3) G.F.Franklin, J.D. Powell, A.E.-Naeni, "Feedback Control of Dynamic Systems" Prentice Hall, 2002. 4) K. Ogata, "Modern Control Engineering" 5th Edition, Prentice Hall, 2010 5) L. Levine, "The Control Handbook", CRC Press, 2005. 6)R.D. Strum and D.E. Kirk, "Contemporary Linear Systems using Matlab" Brooks/Cole, 2000.</p>
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TENTATIVE COURSE OUTLINE				
Week	Day / Month	Topics	Textbook Reading	Assignments / Exams
1	18.09	Introduction to Course	Lecture Notes	
2	25.09	Introduction to Control Systems: Control System Design and Examples	Lecture Notes	Homeworks and/or Problem Solving
3	02.10	Mathematical Models of Systems: Laplace Transform	Lecture Notes	Homeworks and/or Problem Solving
4	09.10	Mathematical Models of Systems: transfer Functions of Electrical Systems	Lecture Notes	Homeworks and/or Problem Solving
5	16.10	Mathematical Models of Systems: transfer Functions of Mechanical Systems	Lecture Notes	Homeworks and/or Problem Solving
6	23.10	Block Diagrams	Lecture Notes	Homeworks and/or Problem Solving
7	30.10	Signal Flow Graphs		
8	06.11	Midterm Week (Outline will be arranged based on exact date of the midterm)		
9	13.11	Recitation		Homeworks and/or Problem Solving
10	20.11	Performance of the Feedback Control Systems: Root Location and Transient Response	Lecture Notes	Homeworks and/or Problem Solving
11	27.11	The Stability of Linear Feedback Systems: Routh-Hurwitz Stability Criteria	Lecture Notes	Homeworks and/or Problem Solving
12	04.12	Root Locus Method	Lecture Notes	Homeworks and/or Problem Solving
13	11.12	Frequency Response Methods	Lecture Notes	Homeworks and/or Problem Solving
14	18.12	Bode Diagrams	Lecture Notes	Homeworks and/or Problem Solving
15	25.12	Recitation		
FINAL EXAMS WEEK, 28/12/2019-12/01/2019 (date and time to be announced later). *Recitation hours (if any) may be occupied to complete the planned curriculum				

COURSE ASSIGNMENTS

There will be **no make-up for homeworks**. Missed works will result in a grade of zero (0). Homeworks given **the next day or even the same day at different hour** will result in a grade of zero.

A. Midterm Exam [30%]

There will be 1 midterm exam. The grade from midterm is 30% of the total grade. The exam will be on paper and it will not be multiple choice problems. It takes approximately 75 min – 90 min. The exact information related to the midterm exam will be given at the course hour.

B. Final [64% + 16%]

Same grading (%50) with midterm is made for final exam. This exam is similar to midterm exam. However 30% of the grade will be from homeworks (if any).

C. Homeworks [16%]

Homeworks are 16% of total grade and also %16 of the total 80% of final exam grade. Homeworks should be hand over with a plain paper with the results of problems or computer simulations. If computer simulations are evaluated to give the problem answer, provide the code with the results. Therefore, it is expected to print out the results and codes. Detailed information will be presented at the course hours and/or web page.

COURSE POLICIES

I. Attendance



Regular class attendance is expected for all students at the University. You are not required but advised to attend all classes.

Please sign the attendance sheet when you come to the class. Any false signatures will result in zero participation grades for all parties involved.

Your absence will not reduce your attendance rate *if and only if* you have a legitimate reason for missing a class (such as illness, death in family, a traffic accident, etc.). In case of an illness or emergency, you must supply a formal documentation that supports your claim.

II. Make-up Exams

Make-ups for Midterm Exams will be available *if and only if* you have a legitimate reason for missing the exam (such as illness, death in family, a traffic accident, etc.). In case of an illness or emergency, you must supply a formal documentation that supports your claim.

III. Late Submission Policy

Late submissions will not be graded. There will be **no make-up for quizzes, homeworks and any assignments**. Missed assignments, homeworks and quizzes will result in a grade of zero (0).

IV. Cheating & Plagiarism

Collaboration is strongly encouraged; however, the work you hand in must be solely your own. Cheating and plagiarism are very serious offenses and will be penalized accordingly by the university disciplinary committee.

Cheating has a very broad description which can be summarized as "acting dishonestly". Some of the things that can be considered as cheating are the following:

- Copying answers on exams, projects and lab works,
- Using prohibited material on exams,
- Lying to gain any type of advantage in class,
- Providing false, modified or forged data in a report,
- Plagiarising (see below),
- Modifying graded material to be re-graded,
- Causing harm to colleagues by distributing false information about an exam, homework or lab.

All of the following are considered plagiarism:

- Turning in someone else's work as your own,
 - Copying words or ideas from someone else without giving credit,
 - Failing to put a quotation in quotation marks,
 - Giving incorrect information about the source of a quotation,
 - Changing words but copying the sentence structure of a source without giving credit,
 - Copying so many words or ideas from a source that it makes up the majority of your work, whether you give credit or not.
- (www.plagiarism.org)

V. Equipment

Calculator and standard equipments (while paper, pencil, etc.) will be used during the quiz (in class assignment) and exams. The students are responsible from the equipment. Exchanging of equipment is not allowed among all of the activities (exam, in class assignment).

VI. Disability Support

If you have a disabling condition which may interfere with your ability to successfully complete this course, please contact head of department.

*** GOOD LUCK ***