

**KING FAHD UNIVERSITY OF PETROLEUM AND MINERALS**  
**ELECTRICAL ENGINEERING DEPARTMENT**

**EE 380 - Control Engineering**

**Tentative Schedule [052]**

DATE	TOPICS	SECTIONS	HW	LABORATORY
<b>Week 1</b> Feb. 13-18	Introduction to Control Systems. Differential Equations of Physical Systems.	1.1 - 1.11 2.1 - 2.2		
<b>Week 2</b> Feb. 20-25	Transfer Function s of Linear systems - Block Diagram Models	2.5 - 2.6		<u>Exp. #1</u> Introduction to MATLAB
<b>Week 3</b> Feb. 27 – Mar. 4	Signal Flow Graphs [SFG]	2.7	HW#1	<u>Exp. #2</u> Introduction to SIMULINK
<b>Week 4</b> Mar. 6-11	State Variables Models - SFG State Models - TF from State Equations	3.1 -3.6	HW#2	<u>Exp. #3</u> Introduction to Servo Kit Components and Identification of Motor Constants
<b>Week 5</b> Mar. 13-18 <b>Major-I</b>	State Transition Matrix Performance of Feedback Control Systems.	3.7 5.1 - 5.4	HW#3	PROBLEM SESSION #1
<b>Week 6</b> Mar. 20-25	Performance of Feedback Control Systems.	5.5 - 5.8		<u>Exp. #4</u> Motor Speed Control Using a P-Controller
<b>Week 7</b> Mar. 27 – Apr. 3	Stability of Linear Feedback Systems.	6.1 - 6.4	HW#4	<u>Exp. #5</u> Study of a Prototype Second Order System
<b>Week 8</b> Apr. 5 - 10	Root Locus Technique	7.1 - 7.3	HW#5	No Lab
<b>Week 9</b> Apr. 12 – 17	Root Locus Technique. Frequency Response Methods	7.4 - 7.5 8.1 - 8.3		<u>Exp. #6</u> Servo Motor Position Control Using a P-controller
<b>Week 10</b> Apr. 19-24	Frequency Response Methods	8.4 - 8.5	HW#6	<u>Exp. #7</u> Analysis of error performance Indices
<b>Week 11</b> Apr. 26 - May 1	Stability in the Frequency Domain	9.1 - 9.3	HW#7	PROBLEM SESSION #2
<b>Week 12</b> May. 3 - 8 <b>Major-II</b>	Stability in the Frequency Domain	9.4, 9.6, 9.9		<u>Exp. #8</u> Servo Motor Speed Control Using a PID controller
<b>Week 13</b> May 10 – 15	Design of Feedback Control Systems	10.1 - 10.3	HW#8	<u>Exp. #9</u> Magnetic Levitation System
<b>Week 14</b> May 17-22	Design of Feedback Control Systems	10.4 - 10.5	HW TBA	<u>Exp. #10</u> Compensation of control systems
<b>Week 15</b> May 24 – May 27	Design of Feedback Control Systems	10.6 - 10.8	HW TBA	Review

## Grade Distribution:

Laboratory	Quizzes/Project /HW/Att.	Major Examinations	Final
20%	10% / 5% / 3% / 2%	15% - 15%	30%

**Textbook:** Modern Control Systems (10<sup>th</sup> Ed.): *Richard C. Dorf and Robert H. Bishop*

## Course Instructors:

Section	Days	Time	Location	Instructor	Contact
EE 380-1	SMW	08:00-08:50	7-113	Dr. A. Masoud	Rm: 14-258-5 Tel: 860-2747
EE 380-2	SMW	09:00-09:50	7-127	Dr. A. Masoud	Rm: 14-210-1 Tel: 860-3740
EE 380-3	SMW	10:00-10:50	7-201	Dr. H. Duwaish	Rm: 14-258-5 Tel: 860-2747

### EE380-01&02, Dr. Masoud

Major Exam I: Building-4, Room-125 Saturday, March 18th , 6:00 – 7:30 pm

Major Exam II Building-6, Room-125 Tuesday, May 9th, 6:30 -8:00 pm

## Important Remarks:

1. Students are required to **READ** and **COMPREHEND** the information contained in the Laboratory instruction sheets prior to coming to the laboratory,
2. The handouts for each problem session will be distributed well ahead of each session. Students are required to work on all the problems prior to coming to the session. They are strongly encouraged to solicit assistance from their instructors,
3. **Attending the full problem session is COMPULSORY,**
4. A quiz will be administered at the end of each session,
5. Problem sessions and lab reports could carry the same weight,
6. Class quizzes will be based on HW,
7. The instructor reserve the right to prevent students who are more than 5 minutes late from entering class,
8. Leaving the class after signing the attendance sheet without the permission of the instructor will result in removing the name of the student from the attendance sheet,
9. Students with more than 9 unexcused absences **will earn a DN grade,**
10. Attendance sheets may be checked at the end of each lecture. The students whose names appear in the sheet without being in class could be **subject to disciplinary actions,**
11. Students are required **to turn off cellular phones** prior to entering the class,
12. **Orderly conduct in class in conformity with the regulations of KFUPM is expected from each student and will be enforced.**