



**University of Tehran**  
**School of Electrical and Computer Engineering**

<b>Course:</b>	<b>8101012 – Linear Control Systems Lab.</b>									
<b>Course type:</b>	EE*						CE*			Credit: 1
	Com	E	P	B	Con	D	SW	HW	IT	
	Required	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Elective	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<b>Level:</b>	Undergraduate <input checked="" type="checkbox"/> Graduate <input type="checkbox"/>									
<b>Co-requisite(s):</b>	Linear Control Systems (8101224)									
<b>Prerequisite(s):</b>	Linear Control Systems (8101224)									
<b>Prerequisite by topic:</b>	Programming, electrical circuit.									
<b>Textbook(s):</b>	[1] R. Dorf and R. Bishop, <i>Modern Control Systems</i> , Tenth Edition, Prentice Hall, 2004. [2] K. Ogata, <i>Modern Control Engineering</i> , 4th Edition, Prentice Hall, 2001. [3] B.C. Kuo, <i>Automatic Control Systems</i> , 5th Edition, Prentice Hall, 1987									
<b>Coordinator:</b>	Abaassian, Professor, School of ECE									
<b>Goals:</b>	The goal of linear control systems laboratory is to create a link between the martials learned in theoretical course and their practical and industrial applications.									
<b>Outcome:</b>	Upon successful completion of the course, students will be able to: <ol style="list-style-type: none"> <li>1) use Matlab for analysis and design of automatic control systems.</li> <li>2) be familiarized with different industrial systems</li> <li>3) model and identify actual systems</li> <li>4) use modeling and identification for linear controller design, testing, tuning and implementation.</li> </ol>									
<b>Topics:</b>	<ol style="list-style-type: none"> <li>1) MATLAB Introduction</li> <li>2) Frequency-Domain Identification of Transfer Function Models</li> <li>3) Time Response of Linear Systems</li> <li>4) Introduction to SimMechanics</li> <li>5) Introduction to LabVIEW</li> <li>6) Lead &amp; Lag Compensators</li> <li>7) PID Controller with LabVIEW</li> <li>8) DC Motor Position Control</li> <li>9) Thermal System Control</li> </ol>									
<b>Computer usage:</b>	Matlab, SimMechanics, LabVIEW									

<b>Assignments:</b>	8 pre-labs and 9 reports
<b>Projects:</b>	None.
<b>Grading:</b>	Reports: 40 % Pre-labs: 10 % Laboratory activities: 20 % Final exam: 30%
<b>Further readings:</b>	
<b>Prepared by:</b>	Abassian, Professor, School of ECE
<b>Date:</b>	September 4, 2017

*EE: Electrical Engineering		CE: Computer Engineering	
Com	Communications	SW	Software
E	Electronics	HW	Hardware
P	Power	IT	Information Technology
B	Bioelectronics		
Con	Control		
D	Digital System		