

## COURSE PROFILE

<b>Course Number:</b> EE 330		<b>Course Title:</b> Electronics I	
<b>Required / Elective:</b> Required (EE)		<b>Pre-requisite:</b> EE 221 Circuit Theory I	
<b>Catalog Description:</b> Operating principles of semiconductors such as Diodes, BJT and FET, Application of these components, waveform shaping, voltage and current amplifiers, digital circuits and CMOS structures. Introduction to frequency analysis.		<b>Textbook / Required Material:</b> Donald A. Neamen, Electronic Circuit Analysis and Design, 2ed., Mc Graw Hill, 2001 (ISBN 0-13-814757-4)	
<b>Course Structure / Schedule:</b> (3+1+0) 3 / 6 ECTS			
<b>Extended Description:</b> Physical structure of semiconductor materials, p type and n type intrinsic semiconductors, p-n junctions and diodes, Diode applications, rectifier, Clipper, Clamper and zener applications. Bipolar Junction Transistor (BJT) Junction Field Effect Transistor and Metal-oxide Semiconductor Field Effect Transistor (MOS-FET) biasing circuits, a.c. small signal analysis, CMOS structures and digital electronic circuits, Differential Amplifiers, Op-Amps and its practical applications, Introduction to bode plots, low frequency response of amplifier circuits.			
<b>Design content:</b> -		<b>Computer Usage:</b> -	
<b>Course Outcomes:</b>			
<ul style="list-style-type: none"> <li>• Ability to apply knowledge of mathematics, science, and engineering to problems in electronics engineering [2] (Strong).</li> <li>• Ability to identify, formulate and solve engineering problems [6] (Moderate).</li> <li>• Ability to use the hardware and software based modeling, simulation, design and communication tools necessary for engineering practice [11] (Rare).</li> </ul>			
<b>Recommended reading:</b>			
Sedra/Smith, Microelectronic Circuits, 5 <sup>th</sup> Edition			
<b>Teaching Methods:</b>			
Pre-readings, lecture, individual exercises, HWs, midterms and quiz exams.			
<b>Assessment Methods:</b>			
In class exams for testing i) Learn the relation between material science and semiconductor technology briefly ii) Analysis for circuits including electronic components of which are used in application and which have certain defined electrical characteristics, iii) gain the ability of analyzing and designing analog and digital electronic circuits.			
<b>Student Workload:</b>			
Preparatory reading	40	Assigned exercise + HW studies	50
Lectures and discussion	50	In class exams (midterm + quizzes)	10
Total		150 hours (6x25 ects)	
<b>Prepared by:</b> Mustafa Karaman		<b>Revision Date:</b> February 10, 2010	