

COURSE PROFILE

Course Number : EE303	Course Title : Simulation Tools
Required / Elective : Required	Pre-requisite : -
Catalog Description: Matlab environment. Vector, matrix and array operations. Matlab commands. Plotting and graphics. Symbolic math. Matlab programming. Search and sort algorithms. Simulink and modeling. Graphical user interfaces. Circuit analysis. Signal processing and applications.	Textbook / Required Material : Mastering Matlab, Duane Hanselman, Bruce Littlefield.
Course Structure / Schedule : (2+0+2) 3 / 6 ECTS	
Extended Description : Characteristics of the Matlab environment and basic features, Basic commands and examples, Vector - Matrix operations, Array and array operations (cell array and structures), Relational and logical operations, Two and three dimensional graphics, Programming with Matlab (control flow), Programming with Matlab (functions), Symbolic Processing with MATLAB, Applications (circuit analysis, fundamentals of signal processing), Applications (simulink), Applications (GUIs- Graphical User Interfaces).	
Design content : Matlab programming, Modeling and simulation of the first and the second order systems, simulation of closed loop systems, Signal (electrical, speech, image, biosignals etc.) processing (block processing, filtering, detection etc.) and applications with Matlab and Simulink.	Computer usage: Matlab and Simulink.
Course Outcomes: Students will learn to use the fundamentals of the mathematics and science to solve the general engineering problems using computer programming and simulations. [1] Students will get an ability to apply their knowledge on mathematics (vector, matrix notations and operations, solving linear equations, solving differential equations, symbolic math operations, differentiation, integration), science (system theory, signal processing, circuit theory), and engineering to the electronics engineering problems. [2] Students will have an ability to simulate the experimental data and analyze and interpret the results. [5] This course will give each student an ability to identify the input and output parameters of the systems and simulate the system models. [6] Students will be able to formulate/define some specific signals (electrical, speech, image, biosignals, etc.) and systems. [7] Students will learn the properties of the signals, signal processing and applications using Matlab programming and Simulink. [11] Level of contribution of course to program outcomes: Strong: 1, 2 Average: 5, 6, 7, 11 Some: -	

Recommended reading:	
Matlab Manual, (http://www.mathworks.com/access/helpdesk/help/techdoc/matlab_product_page2.html)	
Teaching Methods:	
Pre-readings, lectures, individual exercises and group work.	
Assessment Methods: [Related to course objectives]	
Homeworks, Projects, Midterms, Final	
Student Workload:	
Preparatory reading	55 hrs
Lectures, workshop, discussions	28 hrs
Homeworks	20 hrs
Midterms	4 hrs
Projects	12 hrs
Laboratory work	28 hrs
Final Exam	3 hrs
TOTAL 150 hrs ... to match 25 x 6 ECTS	
Prepared by : Assistant Prof. Umit Guz	Revision Date : 02.02.2010