



13. Introduction to Computer for Engineers (EE050IU)

Course designation	<i>This course is an introduction to solving engineering problems through the use of the computer. It introduces general problem-solving techniques including the concepts of stepwise refinement applied to the development of algorithms. This course will cover elementary programming concepts using the MATLAB programming language and apply those concepts towards the solution of engineering problems.</i>	
Semester(s) in which the course is taught	1, 2, summer semester	
Person responsible for the course	School of Electrical Engineering	
Language	English	
Relation to curriculum	Compulsory	
Teaching methods	Lecture, lesson, assignment.	
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 127.5 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): lecture: 37.5 Private study including examination preparation, specified in hours: 90	
Credit points/ECTS	3 credits/4.62 ECTS	
Required and recommended prerequisites for joining the course	None	
Course learning outcomes	Upon the successful completion of this course students will be able to:	
	Competency level	Course learning outcome (CLO)
	Knowledge	CLO1. Understand MATLAB instructions, data type and programming techniques



	Skill	CLO2. Apply MATLAB language to implement, debug and validate the correctness of an algorithm
	Attitude	CLO3. Understand the impact of electrical engineering solutions in a global, economic, environmental and social context



Content	<p><i>The description of the contents should clearly indicate the weighting of the content and the level.</i></p> <p>Weight: lecture session (3 hours)</p> <p>Teaching levels: I (Introduction); T (Teaching); U (Utilization)</p> <table border="1" data-bbox="523 472 1362 1599"> <thead> <tr> <th>Topic</th> <th>Weight</th> <th>Level</th> </tr> </thead> <tbody> <tr> <td>Introduction to computing and engineering & Basic function of MATLAB</td> <td>1</td> <td>I, T,U</td> </tr> <tr> <td>Matrices and Vectors</td> <td>1</td> <td>I, T,U</td> </tr> <tr> <td>File and cell arrays Mathematical operation with arrays</td> <td>1</td> <td>I, T,U</td> </tr> <tr> <td>Plot and graphs Script and function</td> <td>2</td> <td>I, T,U</td> </tr> <tr> <td>Logical operators and conditional statements</td> <td>1</td> <td>I, T,U</td> </tr> <tr> <td>Loop and strings</td> <td>1</td> <td>I, T,U</td> </tr> <tr> <td>Graphical User Interface (GUI) & Image Processing</td> <td>1</td> <td>I, T,U</td> </tr> <tr> <td>Numerical Integration</td> <td>1</td> <td>I, T,U</td> </tr> <tr> <td>Numerical Interpolation</td> <td>1</td> <td></td> </tr> <tr> <td>Curve fitting</td> <td>2</td> <td></td> </tr> <tr> <td>ODE</td> <td>3</td> <td></td> </tr> </tbody> </table>	Topic	Weight	Level	Introduction to computing and engineering & Basic function of MATLAB	1	I, T,U	Matrices and Vectors	1	I, T,U	File and cell arrays Mathematical operation with arrays	1	I, T,U	Plot and graphs Script and function	2	I, T,U	Logical operators and conditional statements	1	I, T,U	Loop and strings	1	I, T,U	Graphical User Interface (GUI) & Image Processing	1	I, T,U	Numerical Integration	1	I, T,U	Numerical Interpolation	1		Curve fitting	2		ODE	3	
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Study and examination requirements	<p>Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.</p> <p>Assignments/Examination: Students must have more than 50/100 points overall to pass this course.</p>																																				



Reading list	<p>Textbook:</p> <p>[1] Stephen J. Chapman, <i>MATLAB Programming for Engineers</i>, Thompson Books.</p> <p><i>Software:</i></p> <p>Mathworld (2014/2014). MATLAB</p>
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