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|  | **National Institute of Technology Meghalaya**An Institute of National Importance | **CURRICULUM** |
| Programme | **Master of Technology (Structural Engineering)** | Year of Regulation | **2018** |
| Department | **Civil Engineering** | Semester | **I** |
| Course Code | Course Name | Pre-requisite | Credit Structure | Marks Distribution |
| L | T | P | C | INT | MID | END | Total |
| **CE 525** | **SOFT COMPUTING LAB -1** | **NIL** | **0** | **0** | **2** | **1** |  | **100** | **100** |
| Course Objectives | To develop the student’s knowledge on understanding programming to solve many problems in different mathematical subjects, especially in numerical analysis and other subjects which connected to computer oriented mathematics. | Course Outcomes | CO1 | Able to use Matlab for interactive computations. |
| CO2 | Familiar with memory and file management in Matlab. |
| CO3 | Able to generate plots and export this for use in reports and presentations. |
| CO4 | Able to program scripts and functions using the Matlab development environment. |
| CO5 | Able to use basic flow controls (if-else, for, while). |
| CO6 | Familiar with strings and matrices and their use. |
| SYLLABUS |
| No. | Content | Hours | COs |
| I | Creating and working with arrays of numbers  | 1 | CO1 |
| II | Creating and printing Simple 2DPlots  | 1 | CO2 |
| III | Creating, saving, and executing a script file  | 1 | CO3 |
| IV | Creating and executing a function file  | 1 | CO4 |
| V | Manipulate matrices and use them as matrices or arrays  | 1 | CO5 |
| VI | Create and work with anonymous functions  | 1 | CO6 |
| VII | Work with symbolic mathematics toolbox  | 1 | CO1 |
| VIII | Saving, loading, importing, and exporting data  | 1 | CO2 |
| IX | Creating 2-D/3-D plots with animation effects  | 2 | CO3 |
| X | Writing script/function file to execute problems on *•* Linear Algebra *•* Curve Fitting and Interpolation *•* Data Analysis and Statistics *•* Numerical Integration, *•* Ordinary Differential Equations  | 2 | CO4 |
| Total Hours | 12 |  |
| **Essential Readings** |
| 1. Hahn, B. D. and Valentine, D. T., “Essential MATLAB for scientists and engineers”, Elsevier, 5th edition 2013. |
| 2. “MATLAB Student Version Releases”, The Math Works, Inc, 2015. |
| **Supplementary Readings** |
| 1. Moler, C., “Numerical Computing with MATLAB”, The Math Works, Inc, 2004. |
| 2. Kiusalaas, J., “Numerical Methods in Engineering with MATLAB”, Cambridge University Press, 2nd edition 2009 |