

Shifted from Sem-III to Sem-IV  
from 2017-18

14

Semester – III

**MAT 521 MATLAB Programming**

Credits 6

**Objective:** The main objective of the paper is to study the MATLAB programming language to solve numerical problems

Unit – I Introduction: Input / out put of Data from MATLAB Command, file Types, Creating saving and, Executing the Script file, Creating and executing functions file, working with files and directories.

Matrices: Matrix manipulation, creating vectors. Arithmetic operations. Relational operations, Logical operations, matrix functions, Determinant of matrix, Eigen values and Eigen vectors.

Unit – II Programming in Matlab: function files, sub functions, Global Variables, Loops, branches and control flow, Interactive input, Recursion, Publishing a report, Controlling Command Windows, Command line Editing.

Unit – III Linear algebra and Interpolation: solving a linear system. Gaussian elimination, Matrix factorizations, Curve fitting, Polynomial curve fitting, Least squares curve fitting, General nonlinear fits, Interpolation.

Unit – IV Differential equations & Graphics: First order linear ODE, Second order ODE, Double integration, Roots of Polynomial, 2-d plots, 3-D plots, Matlab Plotting tools, Mesh and Surface Plots.

Unit – V.. Project: **Research Component.**

**Outcome:** After learning this paper student will be able to write the mathematical programs in MATLAB

**Text Books:** (1) Applied Numerical Methods Using MATLAB, Won Young Yang, Tae-Sang chung, John Morris, A John Wiley and Sons. Inc. Publication.

(2). Solving ODE's with Matlab, L.F. Shampine, I Gladwell, S. Thompson, Cambridge University Press.

(3). Getting Started with MATLAB 7, Rudra Pratap. OXFORD Press.

**Reference Books:**

1. Brain D. Hahn Dan: essential MATLAB for engineers and Scientists, 3<sup>rd</sup> Edition Valentine.
2. Gunnar Backstrom: practical Mathematics Using Matlab.

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Course No :MAT521

Number of Credits :6

**Semester – III -Programming in C**

Unit – I Introduction:

Introduction to computers, Characteristics of Computers, Application area's of computer, Classification of computers, Overview of programming, types of programming languages (classification), Introduction to c, Features of C, Program structure, characteristics of programs, concept of header file.

(15 lectures)

Unit – II C Fundamental

Preprocessor, Character Set, Identifiers, reserved words, constants and variables, Data types, type modifiers, types of statements, Declaration and Initialization, comments,

(15 lectures)

Unit – III I/O operation

Types of I/O statements: formatted and Unformatted, getchar(), putchar(), printf() scanf(), escape sequences and format specifiers(%d, %f, %c,....)

(15 lectures)

Unit- IV Operator and expressions

Types of operators (unary binary and ternary) Classification of operators: assignment, arithmetic, relational, logical, comma operator, sizeof operator, operator, Hierarchy and associativity Type conversion (explicit and implicit), library functions.

(15 lectures)

Unit- V Control statements:

Conditional statements, (if, if else, switch case), Looping Statement (for, while, do while), Nested Loops Infinite Looping, break and continue.

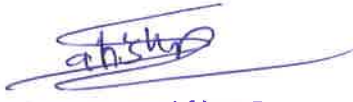
(15 lectures)

**Text Books:**

- 1) Balaguruswamy: Programming in ANSI C
- 2) Yeshwant Kanetkar: Let US C.

**Reference Books:**

- 1) Gottfried: Programming in C Schism's Series
- 2) Brian W. Kernighan, Dennis Ritchie, and Dennis M. Ritchie: The C Programming Language (2<sup>nd</sup> edition)
- 3) Peter Darnell & P. E. Marglis: C- Asogtware Engineering approach, Narosa Publication New Delhi 1993.

  
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