SYLLABUS

of the

Value-added Course

Introduction to MATLAB (MATHVAC 002)

(w.e.f. 2022-2023)

Offered by:

THE DEPARTMENT OF MATHEMATICS
Panskura Banamali College
(AUTONOMOUS)

Panskura R.S.,   Purba Medinipur
West Bengal – 721152

COURSE INFORMATIONIN BRIEF

Course Name: *Introduction to MATLAB*

Course Contents: *Different MATLAB tools to develop student's skill in scientific computing.*

Course Type: Value-added Course
(Optional, additional, and not a part of the CBCS curriculum)

Medium: English

Mode: Offline

Intake: Minimum 20; Maximum 80

Eligibility: +XII, Any interested candidate in Science

Duration: 30 hours of which Theory -10 hours and Practical – 20 hours
(to completewithin a time span of 2 months)

Course Fees: Rs. 300

Coordinator: **DipeshChakraborty (SACT)**
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Structure & Contents

Course Objectives:

This course will introduce students to computer programming and problem solving using MATLAB. It is an introductory course for students aimed at developing their skill in scientific computing. MATLAB is a language designed especially for processing, evaluating and graphical displaying of numerical data. The class is lab-focused, so students will spend much more time doing hands-on exercises in computer lab. There are no maths or programming prerequisites; however elementary skills in computer science will be an advantage.

By the end of the course students are expected to:
• write simple computer programs in MATLAB
• Apply the skills to evaluate scientific problems
• Understand basic concepts in computer science
• Learn data structures (such as strings, matrices and arrays), data manipulation and presentation (loading data files, computing simple statistics and graphing data), and basic programming techniques.

Course Description:

Unit I(15 hrs):

Introduction to MATLAB; Basics of MATLAB: windows - input & output - platform dependence - file types - general commands

Script Files; Function files: Functions – Sub functions; Global Variables, Loops, **Branches and control-flow Tutorials:** Basics - Creating and working with arrays - Creating and Printing simple plots - Creating, saving and executing a script - Creating and executing a function file - Working with arrays and matrices - Importing and Exporting data - Files and Directories - Publishing reports

Unit II (15hrs)

Graphics; Plotting simple graphs; Basic 2D plots: Style Options – Labels, title and legend – Axis Control, zoom in and zoom out – Using plot editor - Overlay plots – **Specialized 2D Plots; Examples:**fplot – semilogx – semilogy – loglog – fill – bar – barh – area – pie – hist – stem – stairs – compass – comet – pcolor; subplots

3D plots; View:view(2) and view(3) with examples; Mesh and surface plots; Examples: plot3 – fill3 – surf – surfc -surf1 – meshz – waterfall – pie3 – stem3

Suggested Readings

1. *Getting started with MATLAB- RudraPratap, Oxford University Press.*
2. *Mastering MATLAB 7- Duane Hanselma and Bruce Littlefield, Pearson Education.*
3. *Understanding MATLAB- S N Alam, I K International Publishing House.*
4. *Programming in MATLAB- Patel and Mittal, Pearson Education India*
5. *Web resource: www.mathworks.com*