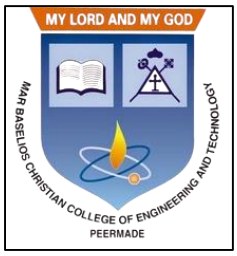


MAR BASELIOS CHRISTIAN COLLEGE OF ENGINEERING AND TECHNOLOGY, PEERMADE

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

REPORT ON

MAT LAB WORKSHOP

MATLAB WORKSHOP

TITLE:
Five-Day MATLAB Workshop

ORGANISED BY:
Department of Electrical and Electronics Engineering

VENUE:
Mar Baselios Christian College of Engineering and Technology, Kuttikkanam

Venue :power system lab

Date:01/November/2023

OBJECTIVE:
To equip participants with comprehensive knowledge and practical skills in MATLAB programming, data analysis, visualisation, and simulation for engineering applications.

Day 1: Introduction to MATLAB

Morning Session:

- Inauguration and introductory speech by faculty coordinator.

- Overview of MATLAB: History, versions, and licensing.

- Applications in electrical, electronics, mechanical, and civil engineering.

- MATLAB environment: Command window, current folder, workspace, editor window explained with demonstrations.

Afternoon Session:

- Basic operations: Arithmetic operations, operator precedence.

- Variables and data types: Rules for naming variables, double, char, logical data types.

- Script files: Creating, saving, and running `.m` files in MATLAB.

Day 2: Programming Constructs and Matrix Operations

Morning Session:

- Relational and logical operators.

- Conditional statements: if, else, elseif with practical examples.Afternoon Session:

- Loops: For loop syntax and factorial program, While loop syntax and number reversal program.

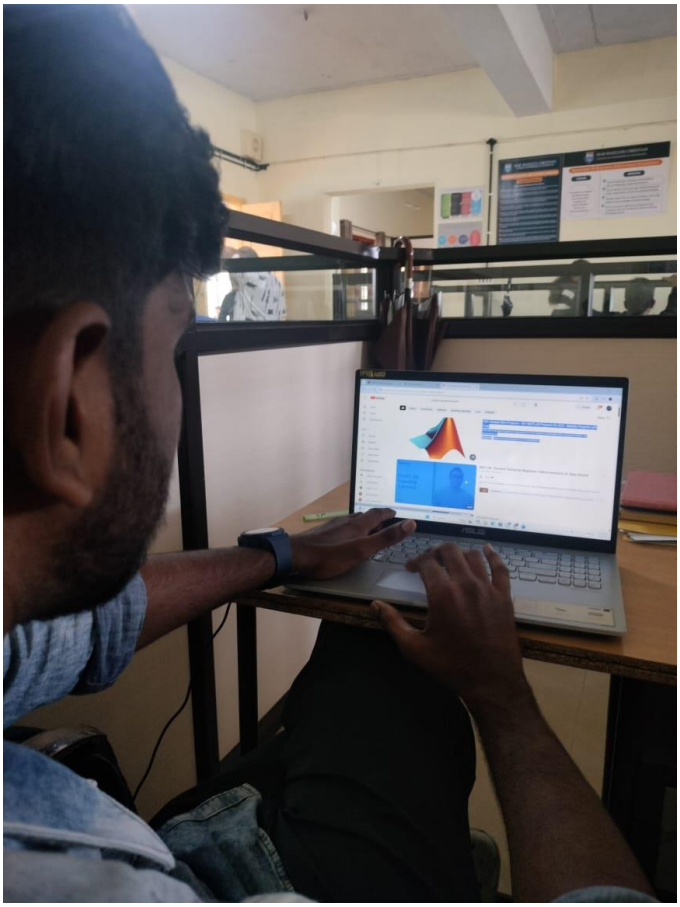
- Vectors and matrices: Row and column vectors, transposing, indexing, matrix creation and operations.

Practice Tasks:

- Fibonacci series program.

- Solve linear equations using inverse and left division operator.

- Matrix multiplication and determinant calculation.



Day 3: Plotting and Data Visualisation

Morning Session:

- 2D plotting: plot(), xlabel, ylabel, title, legend, grid.

- Multiple graphs in a single plot using hold on.

- Subplot: Creating multiple plots in one figure window.

Afternoon Session:

- 3D plotting: plot3(), meshgrid, mesh(), surf().

- Plot customisation: Line style, markers, colors, annotations.

Practice Tasks:

- Plotting sine, cosine, and tangent functions.

- Exponential decay and damped oscillation plots.

- 3D surface plot for z = x^2 + y^2.

Day 4: File Handling and Simulink Introduction

Morning Session:

- File handling: Reading from files using fopen(), fscanf(), fclose().

- Writing data using fprintf().- Excel operations: xlsread(), xlswrite().Afternoon Session:

- Introduction to Simulink: Interface, library browser, block diagram creation.

- Simple models: Step response, first-order RC circuit simulation.

Practice Tasks:

- Simulate mass-spring-damper system.

- Simulate RLC circuit response.

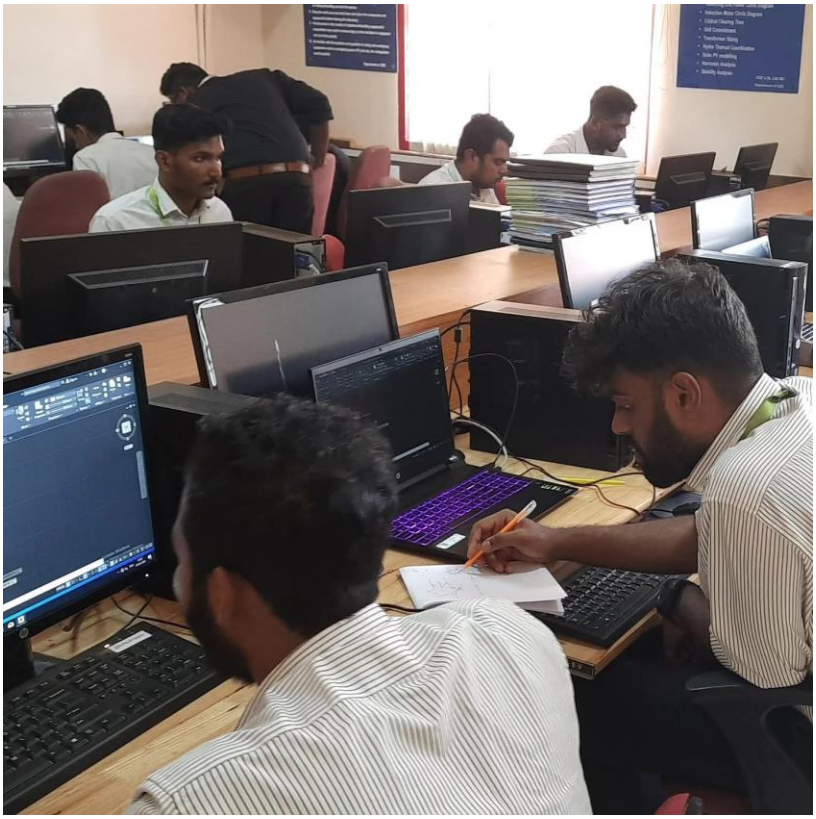
Day5: Project Work and Assessment

Morning Session:

- Advanced applications: Signal processing basics, image processing basics using imread(), imshow(), rgb2gray(), edge().

Afternoon Session:

- Mini-Projects: Group 1: ECG signal, Group 2: DC motor simulation, Group 3: Image processing.



- Group presentations.

- Assessment Test: Objective and coding questions.

- Valedictory Session: Feedback, certificate distribution, vote of thanks.

Outcome:

Participants gained:
- Strong programming fundamentals in MATLAB.
- Skills in plotting, visualisation, and matrix operations.
- Exposure to Simulink modelling and simulation.
- Confidence to integrate MATLAB in projects, research, and advanced subjects.

Relevant Program Outcomes (POs):

◆ **PO1 – Engineering Knowledge**
MATLAB helps apply mathematics, science, and engineering fundamentals to solve electrical engineering problems.

◆ **PO2 – Problem Analysis**
Used to model and analyze complex electrical systems and circuits through simulations.

◆ **PO3 – Design/Development of Solutions**
MATLAB enables the design and development of algorithms and systems (e.g., power systems, control systems).

◆ **PO4 – Conduct Investigations**
Facilitates research and data analysis through simulations and result visualization tools.

◆ **PO5 – Modern Tool Usage**
MATLAB is a modern software tool widely used in industry and academia for solving engineering problems.

◆ **PO10 – Communication**
Students use MATLAB to present results graphically, enhancing their ability to communicate technical data effectively.

◆ **PO12 – Life-long Learning**
Learning MATLAB equips students with an industry-relevant skill, encouraging continued technical learning.

Relevant Program Specific Outcomes (PSOs):

◆ **PSO1 – Design, Analyse, and Test Electrical Systems**
MATLAB is essential for analyzing circuits, testing control strategies, and evaluating system behaviour.

◆ **PSO2 – Specify and Analyze Electronic Systems**
Supports simulation of control systems, signal processing, and power electronics—all key to electrical engineering.

Conclusion:

The workshop successfully enhanced students' computational and analytical abilities essential for engineering problem-solving, projects, and research implementation at Mar Baselios Christian College of Engineering and Technology, Kuttikkanam

Poster:

MAR BASELIOS CHRISTIAN
COLLEGE OF ENGINEERING & TECHNOLOGY

FAMILIARIZATION OF MATLAB

MathWorks

DATE
01 November, 2023

TIME
01.15 - 03.15 PM

VENUE
POWER SYSTEMS LAB

DR.CIJI PEARL KURIAN
B.Tech., M.Tech., Ph.D.
Senior Proffesor
Manipal Institute of Technology,Manipal

ORGANISED BY
DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

NBA NAAC