

GANPAT UNIVERSITY

FACULTY OF ENGINEERING & TECHNOLOGY

Programme		Bachelor of Technology				Branch/Spec.	Mechanical Engineering		
Semester		VI				Version	2.0.0.0		
Effective from Academic Year			2024-25			Effective for the batch Admitted in			July 2022
Course Code		2MC4105		Course Name		Computational Tool			
Teaching Scheme						Examination Scheme (Marks)			
(Per week)	Lecture(DT)		Practical(Lab.)		Total		CE	SEE	Total
	L	TU	P	TW					
Credit	0	0	1	0	1	Theory	0	0	0
Hours	0	0	2	0	2	Practical	30	20	50

Pre-requisites:

Computer Programming, Basic of Computer Programming

1	2	3	4	5	6
Course Outcomes:					

On successful completion of this course, the students will be able to:

CO1	Create and Access scalar, vectors and Matrices in MATLAB.
CO2	Read and write data from files and to screen.
CO3	Prepare 2D and 3D plots using MATLAB graphics.
CO4	Write simple decision making and looping codes.
CO5	Create user defined function for repetitive uses.
CO6	Solve engineering problems using MATLAB.

Practical syllabus

Unit	Content	Hrs
1	Introduction: MATLAB Environment, Help feature, Types of files, Search Path, script file	2
2	Constants, Variables and Expressions: Character set, Data type, Constants and Variables, Operators, Some built in functions	2
3	Vectors and Matrices: Introduction, Scalar and Vector, Entering data in matrices, Line continuation, Matrix indices, Multi-dimensional matrix, manipulations, some useful commands, matrix and array operation, structure array, Cell arrays, useful functions on cell and structure	2
4	Input and Output Statements: Data input, input, keyboard, menu, pause commands, reading and storing file data, output commands, file opening and closing functions, formatted input and output, binary input and output commands	2
5	MATLAB Graphics: Two dimensional plots, Multiple Plots, Style options, legend command, Subplots, specialized two dimensional plots, Three dimensional plots	4
6	Control Structures: Loops, if statement, switch statement, break statement, continue statement, error statement, try-catch statement	5
7	User Defined Functions: function m-file, Passing arguments, Function workspace, Types of functions, Function handles, Errors and warning, MATLAB debugger, Global variables, recursion.	3
8	Simulink Basics: Introduction, starting Simulink, Simulink modelling, Solvers, Simulating model, Using variables, Data import/export, state space modelling, simulation of nonlinear systems	4
9	Applications: Linear algebra, curve fitting and interpolation, data analysis and statistics, ordinary differential equation, nonlinear algebraic equation.	2
10	Minor Projects: Electrical circuits, control systems, optimization, engineering mechanics, mechanical vibration, Interfacing.	4

Practical Content

The Practical/term work shall be based on the topics mentioned above and will be defended by the candidates.

Text Books

1	Raj Kumar, Ashok Kumar Goel, Manoj Kumar Sharma, "MATLAB and its applications in Engineering".
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Reference Books

