COURSE TITLE	**MATLAB FOR CHEMICAL ENGINEERS**
COURSE CODE	**01CH0205**
COURSE CREDITS	**1**

Objective:

1 To make students familiar with MATLAB software and Utilization in chemical engineering domain..

Course Outcomes: After completion of this course, student will be able to:

1 Apply basic MATLAB commands and functions to perform computational works.

2 Analyze the data Graphically using MATLAB.

3 Evaluate any Equation using Linear and Non-Linear Curve Fitting.

4 Apply the concept of MATLAB in Mathematical Modeling of various problems.

Pre-requisite of course: Basics of computing

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
0	0	2	0	0	0	50	50

Contents : Unit	Topics	Contact Hours
Total Hours		

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Experiment 1** Introduction To MATLAB: MATLAB Environment, Types of Files, Introduction to MATLAB commands	3
2	**Experiment 2** Constants and Variables, Operators	3
3	**Experiment 3** Matrices and Vectors: Scalars and Vectors, Multidimensional Matrices.	3
4	**Experiment 4** Matrix Additions, Matrix Multiplications, Rank of Matrix, Determinant of Matrix, Eigen Values and vectors.	3
5	**Experiment 5** MATLAB Graphics: Two-Dimensional Plot , Three-Dimensional Plot.	3

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Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
6	**Experiment 6** Pi-Chart, Chart Properties.	3
7	**Experiment 7** Polynomials: Characteristic of Polynomials Matrix, Roots of polynomials, , Polynomial operations: addition and subtraction, differentiation, integration, multiplication, division, formulation of polynomial equation.	3
8	**Experiment 8** Ordinary differential equations and integrations, Interpolation using existing solvers.	4
9	**Experiment 9** Array: Array Calculations, Array Indexing, Array Modifications, Functions Calls, Logical Arrays	3
10	**Experiment 10** Application of MATLAB in Chemical Engineering, Balancing equations using MATLAB, Solving Homogeneous linear system	4
Total Hours		**32**

Textbook :

1 Numerical methods for chemical engineering: applications in Matlab, Beers, K. J., Cambridge University Press, 2007

References:

1 Chemical engineering computation with MATLAB, Chemical engineering computation with MATLAB, Yeo, Y. K., CRC Press., 2020

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery					
Remember / Knowledge	**Understand**	**Apply**	**Analyze**	**Evaluate**	**Higher order Thinking / Creative**
0.00	0.00	35.00	35.00	30.00	0.00

Instructional Method:

1 The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board, may also use any of tools such as demonstration, role play, Quiz, brainstorming, MOOCs etc.

2 The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.

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Instructional Method:

3 Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

4 Students will use supplementary resources such as online videos, NPTEL videos, ecourses, Virtual Laboratory.

Supplementary Resources:

1 https://www.mathworks.com/solutions/chemical-engineering.html

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