Teaching Scheme					MATLAB Programing Practical (22PCM215P)					
					Examination Scheme					
L	T	P	C	Hours/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/VIVA	
0	0	2	1	2	--	--	--	50	50	100

COURSE OBJECTIVE:

- Acquire programming skills in MATLAB.
- Impart knowledge on various syntaxes in MATLAB and development of user defined functions.
- Exposure to algorithms solve engineering problems by computational methods.
- Develop algorithms to solve complex engineering problems.

LIST OF EXPERIMENTS

1. Data representation, error analysis, introduction to MATLAB; Applied MATLAB programming
2. Structured programming and looping.
3. Numerical solution of algebraic and transcendental equations.
4. Interpolation: Newton Gregory forward interpolation and Lagrange's interpolation.
5. Curve fitting: Straight line fit, polynomial curve fit and exponential curve Fit.
6. Numerical integration: Trapezoidal rule, Simpson's one-third rule, Simpson's three-eighth rule, Weddle's rule, Romberg's method and double integration.
7. Solution of simultaneous algebraic equations: Gauss elimination method.
8. Numerical solution of ordinary differential equation: Taylor's method, Euler's method, Runge-Kutta method, modified Euler's method; Predictor corrector method: Adam's method and Milne's method.
9. Numerical solution of partial differential equation: Bender-Schmidt method and Crank- Nicholson method.
10. Optimization algorithms and introduction to Simulink.

Max. 28 Hr.

COURSE OUTCOMES

On completion of the course, students will be able to

CO1: Understand various numerical tools in MATLAB and develop an analogy between MATLAB and other programming toolboxes.
CO2: Develop solution to various numerical problems in differentiation, integration and curve fitting.
CO3: Classify and develop solution to initial and boundary value problems applied to petrochemical technology.
CO4: Evaluate solutions to algebraic equations and statistical techniques.
CO5: Formulate mathematical model to complex engineering problems and develop solution algorithms.
CO6: Correlate the fundamental concepts gained to develop efficient solution.

TEXT/REFERENCE BOOKS:

1. Chapra, S., "Applied Numerical Methods with MATLAB for Engineers and Scientists", Edition: 4, McGraw-Hill Education (2017).

2. Pratap, R. “Getting Started with MATLAB: A Quick Introduction for Scientists & Engineers’’, Oxford University Press, (2010).
3. Ahuja, P. “Introduction to Numerical Methods in Chemical Engineering”, PHI Learning Pvt., Edition: 2 (2019).
4. Yang, W.Y., Cao, W., Chung, T. and Morris, J. “Applied Numerical Methods Using MATLAB”, John Wiley & Sons, Inc. (2005).
5. Kreyszig, E. “Advanced Engineering Mathematics”, Edition: 10, Wiley (2015).

END SEMESTER EXAMINATION QUESTION PAPER PATTERN

Max. Marks: 100	**Exam Duration: 3 Hr.**
Part A: Lab Work	50 Marks
Part B: Lab Exam/Viva	50 Marks