MATLAB AND PRO-II APPLICATIONS IN CHEMICAL ENGINEERING

Course Code: 15CH2111	**L**	**P**	**C**
	0	**3**	**2**

Course outcomes: On successful completion of the laboratory course, the student should be able to

CO1: Solve algebraic equations using fsolve command.

CO2: Solve differential equations, boundary value problem and non linear regression by choosing appropriate command.

CO3: Apply fmincon and fminunc commands to solve optimization problems.

CO4: Predict the design parameters of the separation equipment such as distillation column, absorber, liquid-liquid extractor by simulation.

CO5: Apply case study analysis, a feature of the software PROVISION PRO-II in order to obtain optimum values for variables to meet the design specification.

The source code in the form of m file should be attached with the results.

1) Simulation of a boundary value problem: Tubular reactor with axial diffusion.
2) Simulation of a delay differential equation: CSTR with recycle.
3) Control system design for a non Isothermal CSTR.
4) Dynamics of a bioreactor exhibiting multiple steady states.
5) Non linear regression: fitting a catalytic rate model.
6) Constrained optimization problem using general MATLAB: Optimization of the dimensions of a fin.
7) Simulation of a Propane-Propylene splitter distillation column.
8) Simulating distillation column with side trays, multi feed column, interstage heaters and non ideal trays.
9) Absorber design
10) Absorbers with reboilers and condensers simulation.
11) Simulation of LLE columns.
12) Simulating interconnected distillation columns.
13) Simulating a Pressure Swing Distillation column.
14) Tray sizing.