SIMULATION LAB

Course Code: 13ME2317

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Course Outcomes:

At the end of the course, the student will be able to

CO1. Solve numerically the problems of steady and unsteady state heat conduction in a slab

CO2. Estimate theoretically the heat transfer rate from rectangular and triangular fins

CO3. Solve numerically the problems of forced convection in internal flow and natural convection heat transfer

CO4. Design from numerical computations the parallel and counter flow heat exchangers

CO5. Explain TDMA and methods to solve first and second order ordinary differential Equations

LIST OF NUMERICAL PROBLEMS:

Any TEN numerical problems.

The following problems are solved using MATLAB, FEM and FVM softwares.

1. Two dimensional steady state heat conduction in a slab.
2. One dimensional unsteady state heat conduction in a slab.
3. Heat transfer from a rectangular fin.
4. Heat transfer from a triangular fin.
5. Laminar flow through a rectangular duct.
6. Laminar natural convection from a vertical plate.
7. Parallel flow double pipe heat exchanger.
8. Counter flow heat exchanger.
9. Solution of a Tridiagonal matrix (TDM) using Thomas algorithm.
10. Solution of a second order ordinary differential equation by fourth-order Runge-Kutta Method.
11. Solution of simultaneous first order ordinary differential equations by fourth-order Runge-Kutta Method.