Semester Project Outline: Determining Temperature Distribution of Heated Plate

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Overview:

- Discuss the basics of conduction heat transfer
    - Heat equation
    - Heat generation
    - Thermal conductivity (k)
- Explain how Nodal Analysis works for 2D conduction of a plate
- Explain why this method is useful in heat transfer vs other methods like analytical differentiation
- Discuss different types of boundary conditions
    - Prescribed temperatures
    - Constant heat flux
    - Adiabatic

Example:

- Use a 2D plate with about 20-50 nodes and prescribed temperature boundary conditions
    - Set up system of equations
    - Create matrix
    - Solve matrix to determine temperatures at each node
    - Explain method of solving matrix
- Explain/show how differing boundary conditions would affect temperatures at each node