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Learning Outcomes:

Mathematical models of practical problems in science and engineering can seldom be solved analytically. Instead, problems are often solved numerically using various algorithms resulting in approximate solutions. A complex computational problem can typically be broken into simpler components requiring such elementary tasks as numerical interpolation, numerical solution of linear or nonlinear algebraic systems, numerical differentiation and integration, etc. Successful completion of the course should enable you to

1. demonstrate an understanding of
   - fundamental ideas of numerical analysis: conditioning, stability and convergence,
   - the behavior of numerical algorithms: their strengths and limitations.

2. implement basic numerical methods using clear and correct computer code.

3. present written solutions to problems in a clear, concise and coherent fashion.

This knowledge is essential for the evaluation of existing numerical software, and for the design of new algorithms and software.