

Computational Fluid Dynamics (AE/ME 339) Syllabus

- Ordinary differential equations (ODE)
- Numerical techniques for solving ODEs
- Example: Flow in constant area pipe with heat addition and friction
- Partial differential equations, classification
- Discretization of derivatives
- Errors and analysis of stability
- Example: Unsteady heat conduction in a rod
- Example: Natural convection at a heated vertical plate
- Discretization techniques
- Couette flow
- The shock tube problem
- Introduction to packaged codes:
 - Grid generation
 - Problem setup
 - Solution
- Turbulence modeling