Numerical modeling is an enormously powerful tool that, when applied correctly, can yield new understanding in a wide range of problems in science and engineering. In this class we work up to coding, simulating and visualizing 3D compressible, nonlinear fluid flow on a supercomputer.

- Introduction to fluid flow equations, kinematics
- Numerical method theory, application: Finite difference, volume
- Adaptive mesh refinement • Stability and Convergence • Visualization
- Using supercomputers: Batch systems, basics of code optimization

Taught by Dr. Brian Jewett. Details: rt.atmos.uiuc.edu/502. The only black box is visualization; we code everything else!