

## **A Few Finite Element Courses at Rensselaer**

### **CSCI-6860 Finite Element Analysis**

Galerkin's method and extremal principles, finite element approximations (Lagrange, hierarchical and 3-D approximations, interpolation errors), mesh generation and assembly, adaptivity (h-, p-, hp-refinement)...

### **MEAE-4240 Introduction to Finite Elements**

An introductory course in use of the Finite Element Method (FEM) to solve one- and two-dimensional problems in fluid mechanics, heat transfer, and elasticity...

### **MEAE-6660 Fundamentals of Finite Elements**

Graduate-level course on the fundamental concepts and technologies underlying finite element methods for the numerical solution of continuum problems...

### **MEAE-6670 Nonlinear Finite Element Methods**

The formulations and solution strategies for finite element analysis of nonlinear problems are developed. Topics include the sources of nonlinear behavior...

### **MEAE-6680 Finite Element Programming**

Examines the implementation of finite element methods. Consideration is first given to the techniques used in classic finite element programs...

### **MEAE-6690 Advanced Finite Element Formulations**

This course focuses on generalized weighted residual methods and multi-field variational principles for constructing approximate solutions to sets of governing differential equations and associated boundary conditions...

### **MEAE-6700 Finite Element Methods in Structural Dynamics**

Solutions to the free vibration and transient dynamic responses of two- and three-dimensional structures by the finite element method are considered...

### **MEAE-6760 Finite Element Methods for Fluid Dynamics**

Analysis of finite element methods for basic classes of problems in fluid mechanics. Starting with scalar transport equations and building...