

MECH6353 - Computational Mechanics

[MECH 6353](#) Computational Mechanics (3 semester credit hours) This course provides an in-depth discussion on Finite Element Method (FEMs) for solving solid mechanics problems. The course topics include total and updated Lagrangian formulations in finite element methods, variational principles in continuum mechanics, FEM/meshfree shape functions and numerical discretization, adaptivity and error estimates, explicit and implicit time integration methods, stability and convergence analysis, space-time FEM formulation, Newton's method and constraints, method of line-search and arc-length methods, impact and contact, computational elasticity and inelasticity. Prerequisites: [MECH 6351](#) or equivalent. (3-0) T