

**Course Contents:**

Role of constitutive modeling; Importance of laboratory testing with relation to constitutive modeling; Elasticity: linear, quasi linear, anisotropic; Plasticity basics: yield criteria, flow rule, plastic potential, hardening/softening; Rate Independent Plasticity: mohr-coulomb, nonlinear failure criteria, Drucker Prager, and cap models; Critical state soil mechanics: critical state concept, cam clay models, simulation of single element test using cam clay, consolidation, drained and undrained triaxial test; Stress dilatancy theory; Work hardening plasticity theory: formulation and implementation; Applications of elasto-plastic models; Special Topics: hypoelasticity-plasticity, disturbed state concept.