

# MATERIALS SCIENCE (MTSC)

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**MTSC 3010 Mechanical Behavior of Materials (4 Credits)**

Effects of microstructure on mechanical behavior of materials (metals, polymers, ceramics and composites); emphasis on recent developments in materials science, modulus, fracture (fracture toughness and brittle strength), fatigue, creep, wear, friction, stress rupture and deformation. Cross listed with MTSC 4010. Prerequisites: ENME 2421.

**MTSC 3020 Composite Materials I (4 Credits)**

An introduction to composite materials. Properties of fibers and matrices, fiber architecture, elastic properties of laminae and laminates, interface in composites. Cross listed with MTSC 4020. Prerequisites: ENME 2410 and ENME 2541.

**MTSC 3450 Fracture Mechanics (4 Credits)**

Topics include stress field at a crack tip, linear fracture mechanics, energy release rate, stress intensity factors, plastic zones, plane stress, plane strain, fracture toughness, airy stress functions, elastic-plastic fracture mechanics, J integral, crack tip opening displacements, experimental testing, fatigue, life prediction, crack closure, weight functions, failure analysis. Cross listed with MTSC 4450. Prerequisites: ENME 2421 and ENME 2541.

**MTSC 3800 Topics in Materials Science (1-5 Credits)**

Various topics in materials science as announced. May be taken more than once. Prerequisite: varies with each topic.