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Computational Mechanics Of Composite Materials

structural mechanics (plates and shells), composite materials, computational fluid dynamics and heat transfer, and applied mathematics. His contributions to mechanics of composite materials and structures are well known through his research on refined plate and shell theories and their finite element models. Most methods in micromechanics of materials are based on continuum mechanics rather than on atomistic approaches such as nanomechanics or molecular dynamics. In addition to the mechanical responses of inhomogeneous materials, their thermal conduction behavior and related problems can be studied with analytical and numerical continuum methods. All these approaches may be subsumed under the name of "continuum micromechanics".

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The Mechanics, Materials, and Computing (MMC) group conducts research focused on the scientific understanding and practical application of the emergent complex behavior of materials, on composite materials, and structural health monitoring. MMC researchers analyze the deformation, flow, and failure of both natural and engineered materials.

Computational Mechanics of Composite Materials will be of interest to academic and practising civil, mechanical, electronic and aerospace engineers, to materials scientists and to applied mathematicians requiring accurate and usable models of the behaviour of composite materials.

The primary focus of this course is on the teaching of state-of-the-art numerical methods for the analysis of the nonlinear continuum response of materials. The range of material behavior considered in this course includes: linear and finite deformation elasticity, inelasticity and dynamics.

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The faculty in the Mechanics of Materials Research Group conduct research and offer coursework involving topics at the interface of materials science and mechanics of materials. A major theme is the incorporation of materials structure-property relations in approaches suitable for engineering analysis. A combination of experimental mechanics, analytical and computational

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Mechanics of Composite Materials is a bimonthly periodical covering results of original experimental and theoretical research on the mechanical properties and behavior of composite materials

and their constituents. Particular attention is focused on the following problems of the mechanics of composite materials:

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Computational Mechanics of Fatigue and Life Predictions for Composite Materials and Structures Jacob Fish and Qing Yu Department of Civil Engineering, Mechanical and Aerospace Engineering Rensselaer Polytechnic Institute, Troy, NY 12180 Abstract A multiscale fatigue analysis model is developed for brittle composite materials. The mathematical

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Mechanics of Laminated Composite Plates and Shells

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