



SCUOLA DI INGEGNERIA E ARCHITETTURA

Martedì 10 Settembre, ore 16:00 - 17:00, Aula TA08, Via Terracini 28, Bologna

Seminario: **Mechanical damage in soft biological tissues**

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Injury of soft tissue is often related to the mechanical behavior and damage in the tissue. This talk will give a brief summary of some recent research highlights in the area of mechanics and damage in soft tissues. The development of a reactive-inelasticity (RIE) framework to describe the mechanical response of tendon will be discussed, as well as the potential for its implementation under a wide range of loading. Recent results show that this method may be able to provide insight into the relative roles of damage, viscoelasticity and plasticity in the nonlinear mechanical behaviors commonly seen in soft tissue. To address other mechanical processes in tendon, models to assess the effects of fluid flow and fibril inter-twining will be described and the results discussed. In addition, small tears in meniscus may lead to clinically-relevant meniscus tears. This possibility is explored in the context of fracture mechanics of meniscus tissue. Other topic will be addressed if time allows.

Michael H. Santare, earned his B.S. in Mechanical Engineering from Rensselaer Polytechnic Institute, and his M.S. and Ph.D. in Theoretical and Applied Mechanics from Northwestern University. In 1986, he joined the faculty in Mechanical Engineering at the University of Delaware. At Delaware, he regularly teaches university classes in the general area of Mechanics and has developed specialized courses in the areas of Orthopedic Biomechanics, Forensic Engineering and Fracture of Complex Material Systems. From 1993-98, and 2014-17 he was the Director of the Center for Biomechanical Engineering Research at Delaware. He was one of the founding faculty members of the Biomechanics and Movement Science Program at the University of Delaware and in 2010 he became an Affiliated Professor in the newly-formed Biomedical Engineering Department. In 2012, Dr. Santare was invited to Beijing to teach the course he developed in Orthopedic Biomechanics at Peking University. He has authored or co-authored over 100 research publications, and has been invited to give presentations nationally and internationally. He is co-inventor on a patent for an orthopedic device. His areas of expertise include orthopedic biomechanics, applied mechanics and mechanics of composite materials.

Il seminario, in Inglese, avrà un taglio divulgativo: è aperto a studenti, dottorandi e docenti interessati.

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