The Experimental Biomechanics Core

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DEPARTMENT OF BIOMEDICAL ENGINEERING
UAB Schools of Engineering and Medicine

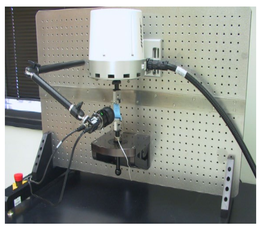
Mission & Vision

The **Mission** of the Experimental Biomechanics Core (EBC) is to provide collaborating investigators with state-of-the-art equipment and trained personnel to facilitate mechanical testing and measurement of mechanical properties of biological and man-made materials, structures, and constructs.

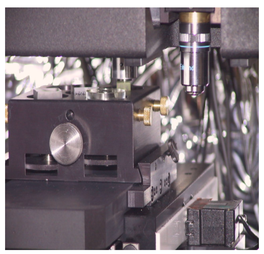
The **Vision** for the EBC is to be a self-contained, fully supported experimental Core facility, with trained staff and fully maintained state-of-the-art equipment to support research activities as described in the Mission.

Mechanical Testing

MTS 858 MiniBionix
Available for high force testing (tens to thousands of pounds), single overload and cyclic modes. Extensometer, strain gauges and a high speed infrared camera available for displacement measurement. Strength and stiffness measurement



Bose Testbench Available for low force testing (gram–22 N) & small deformations (microns–mm). Non-contact strain measurement system and dynamic mechanical analysis (DMA) are also available.



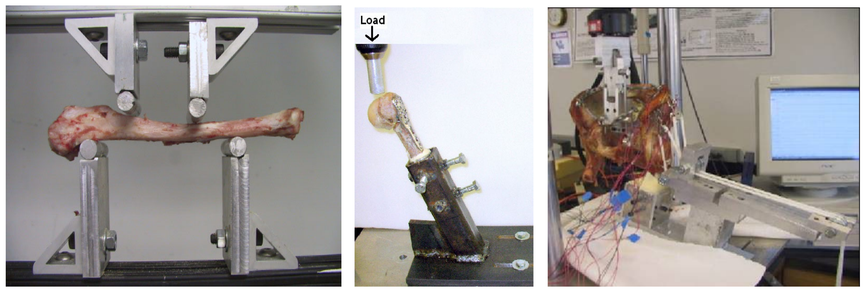
MTS G200 Nanoindenter Berkovitch diamond indenter tip to probe surfaces, providing hardness and modulus at a micron scale. Continuous stiffness measurement (CSM) and topographical mapping of output measures.

Impact & Wear Testing

Drop Tower / Linear Impactors provide impact forces, energy absorption during impact events.

AMTI Orthopod Friction & Wear Tester 6-station pin-on-disk device allows variable forces and wear patterns for submerged specimens in a heated bath; friction coefficients are provided by three triaxial load cells for screening of materials for joint replace-ment & other applications.

Example Tests



Four-point bend testing of a dog tibia (left)
Varus collapse testing of plated humerus (center)
Single legged stance of instrumented pelvis (right)

Example Projects & Collaborators

Impact characterization of new composites – Uday Vaidya, PhD, Material Science & Engineering

Characterization of mouse cartilage in an osetoarthritis mouse model – Rosa Serra, PhD, Pathology

Wear testing of nanostructured diamond coatings for TMJ implants – Yogesh Vohra, PhD, Physics

Nanoindentation properties of bone-implant interfaces – Jack Lemons, PhD, Dentistry

Effects of repeated insertion on pull-out strength in metaphyseal bone – Brent Ponce, MD, Orthopedic Surgery

Acknowledgements

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Fee Structure & Contact Info

Full day, equipment only (except Orthopod):	$250
Half day, equipment only (except Orthopod):	$125
Full day Orthopod:	$50
Half day Orthopod:	$25
Training/instruction (Eberhardt)	$75/hr
Training/assistance (Lab Coordinator)	$20/hr

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