

Biomedical Engineering

Biomedical Engineering at the University of Hartford

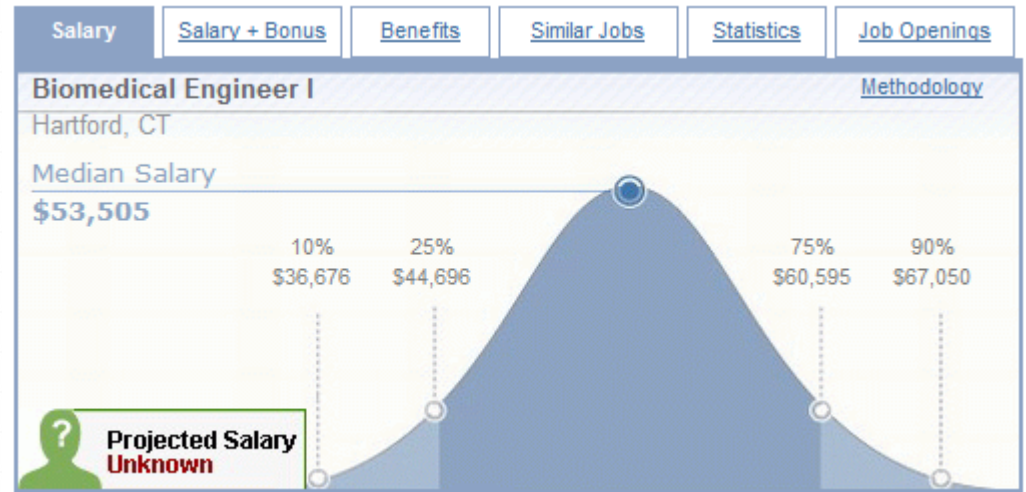
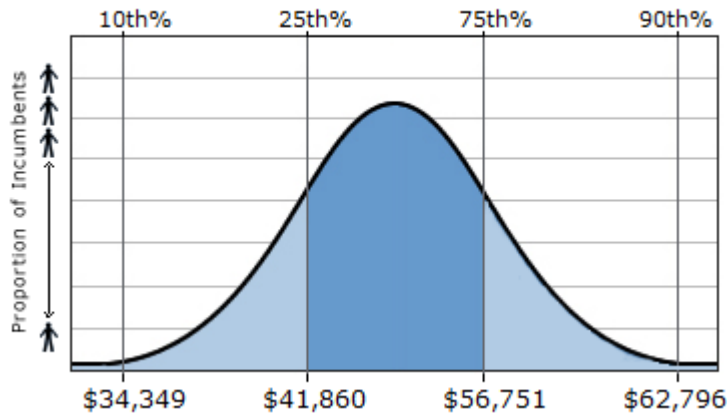
- Within the Department of Civil, Environmental, and Biomedical Engineering
- 2 Faculty Members
 - Arico, Mary C.
 - Nowak, Michael (Program Director)
- Offerings
 - Biomedical Engineering
 - Pre-med option
 - EE track (new)
 - For non majors
 - Minor in Biomedical Engineering
- Program features
 - Research internship
 - Clinical internship
 - Two semester senior project

Biomedical Engineering Employment

- Employed in universities, industry, hospitals, research facilities, and government regulatory agencies.
- Often serve a coordinating or interfacing function, using their background in both the engineering and medical fields.
 - Create designs where an in-depth understanding of living systems and of technology is essential.
 - Conduct performance testing of new or proposed products.
 - Establish safety standards for devices.
 - Provide advice on the selection and use of medical equipment, as well as supervising its performance testing and maintenance.
 - Build customized devices for special health care or research needs.
 - Supervise laboratories and equipment
 - Participate in research activities in collaboration with other researchers with such backgrounds as medicine, physiology, and nursing.

Biomedical Engineering Employment

Biomedical Engineer I - U.S. National Averages



Job Description for Biomedical Engineer I

Designs, develops and provides safety testing, repair, and maintenance of biomedical equipment. Ensures that the biomedical equipment is in compliance with applicable regulatory requirements and quality control standards. Requires a bachelor's degree and 0-2 years of direct experience in the field. Familiar with a variety of the field's concepts, practices, and procedures. Relies on limited experience and judgment to plan and accomplish goals. Performs a variety of tasks. A certain degree of creativity and latitude is expected. Typically reports to a supervisor or manager.

[New Search](#)

Data from salary.com

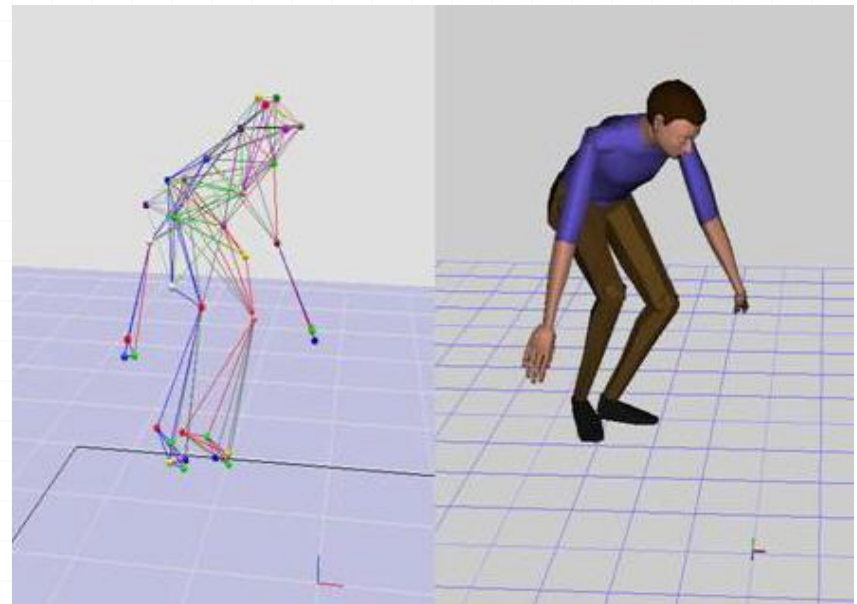
What is Biomedical Engineering?

- Using engineering, math, and science, to make people live **safer, healthier, and happier** lives!
- Three main areas
 - Biomechanics
 - Tissue and cellular
 - Imaging and technology



Biomechanics

o Motion evaluation and analysis



Biomechanics

o Motion evaluation and analysis



Biomechanics

o Orthopedics



What is Orthopedics?

- o Most people will see an orthopedic specialist at some time in their life--some people frequently, yet there is often confusion about what the orthopedics specialty means.
- o Orthopedics is the study of the musculoskeletal system. Orthopedic doctors specialize in diagnosis and treatment of problems of the musculoskeletal system.
- o The musculoskeletal system includes:
 - o Bones
 - o Joints
 - o Ligaments
 - o Tendons
 - o Muscles
 - o Nerves

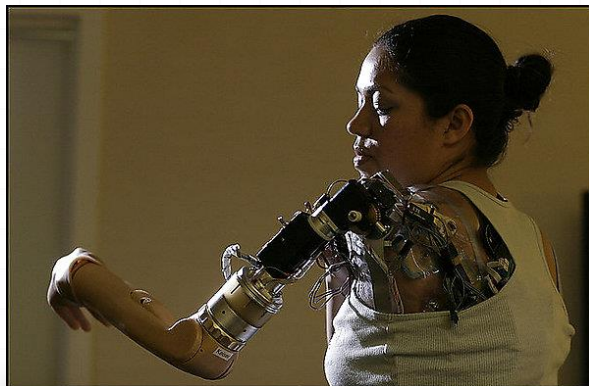
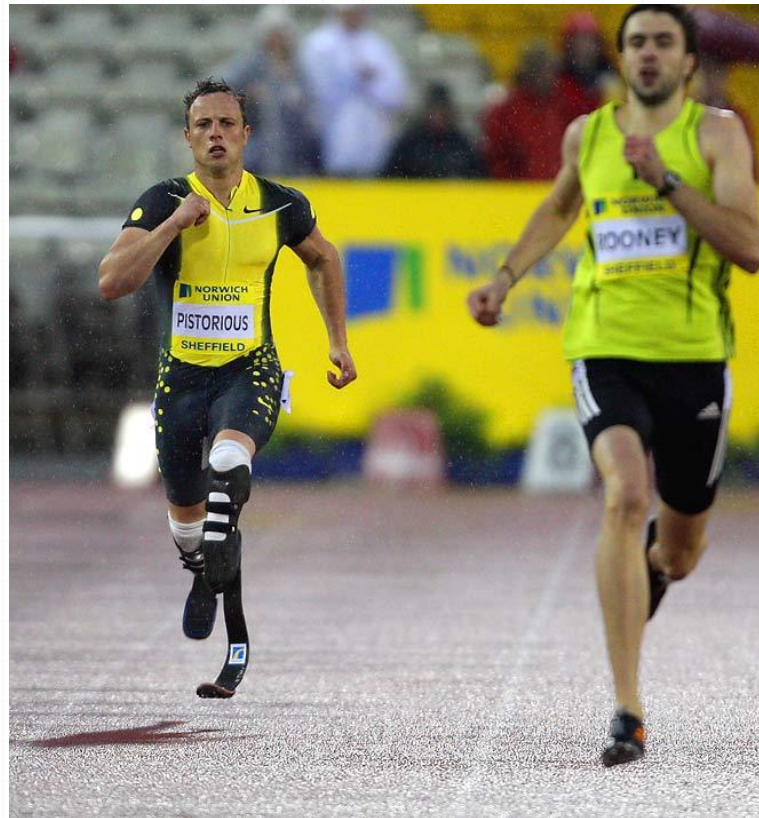
Biomechanics

o Orthopedics



Biomechanics

o Prosthetics and orthotics



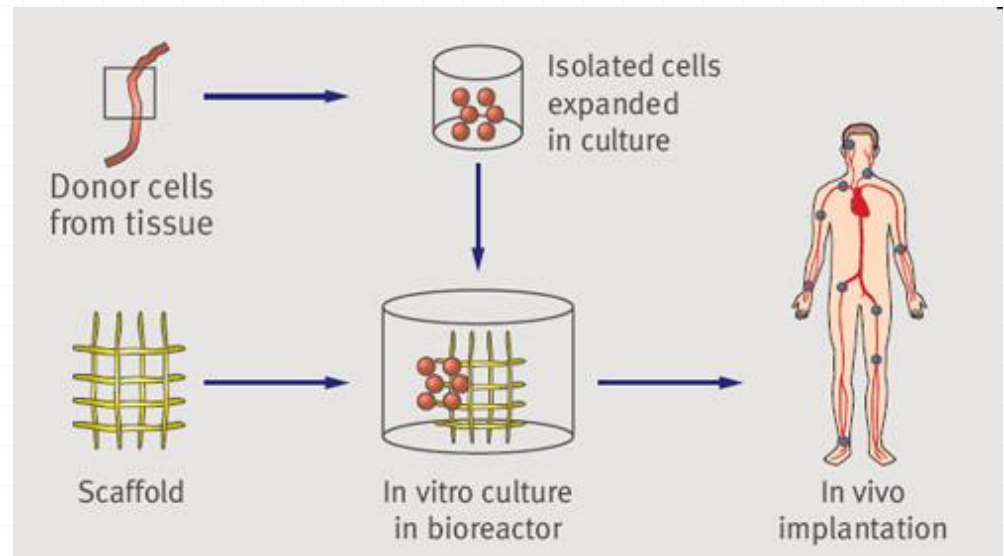
Biomechanics

- Injury prevention and rehabilitation



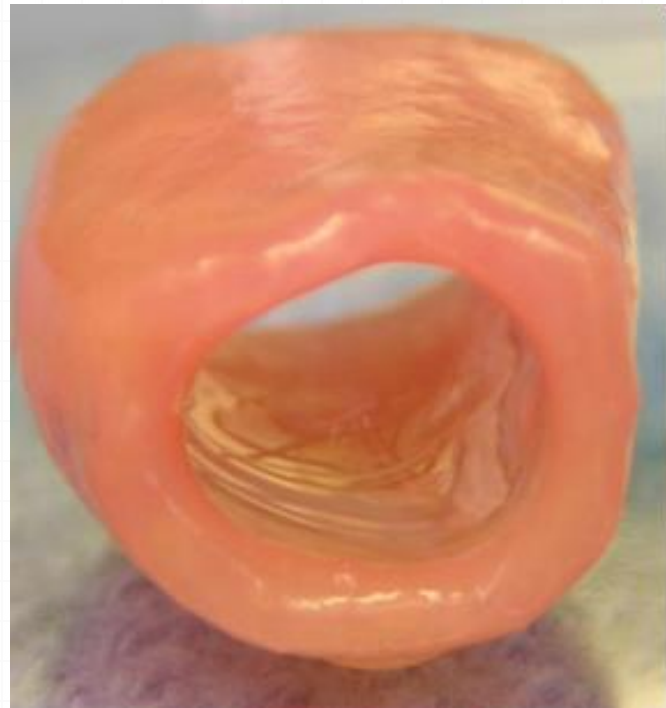
Tissue and Cellular

- Artificial scaffolds to simulate growth
- Cartilage
- Bone
- Skin
- Organs
- Cells



Tissue and Cellular

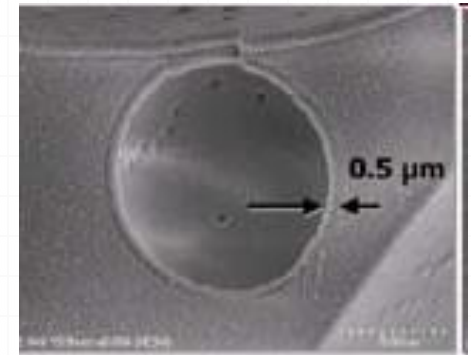
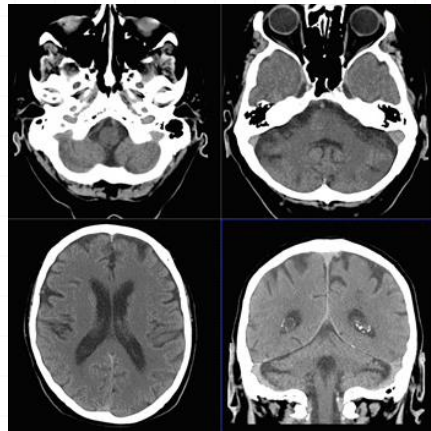
- Stem cells



(from Children's Hospital in Boston)

Imaging and Technology

- Imaging modalities
- Drug delivery systems



MRI

- Magnetic resonance **imaging** (**MRI**) is a test that uses a magnetic field and pulses of radio wave energy to make pictures of organs and structures inside the body.
- In many cases, **MRI** gives different information about structures in the body than can be seen with an X-ray, ultrasound, or computed tomography (CT) scan.

Student Clubs

o BMES: Biomedical Engineering Society

The screenshot shows the BMES website homepage. At the top, there is a navigation bar with the BMES logo (a diamond shape with a stylized 'A' and 'E' and a waveform) and the text 'BMES BIOMEDICAL ENGINEERING SOCIETY™'. To the right of the logo are links for 'RENEW', 'JOIN', and 'Login'. Below the logo is the tagline 'Advancing Human Health and Well-Being™' and a photograph of a woman in a lab coat. The main content area is divided into several sections. On the left, there is a vertical menu with links for 'Students', 'Research', 'Industry', 'About BMES', 'Membership', 'Career Connections', 'Publications', 'Meetings', 'Awards', 'News/Press Room', 'Affiliates/Resources', and 'Advertising'. The central section features a large banner for the '2012 Annual Meeting' in Atlanta, scheduled for October 24-27, 2012, with a call to action to click for more information and registration. Below this is a search bar with the placeholder text '<keyword>' and a 'SEARCH' button. To the right of the search bar is a 'News' section with two articles. The first article, dated 10/27/2012, is titled 'Annual Meeting Daily Update: October 27, 2012' and discusses a talk by a civil rights leader. The second article, dated 10/26/2012, is titled 'Material shows promise in aiding regeneration of injured spinal cord, Northwestern researchers find' and discusses research on re-absorbable sutures. On the far right, there are two 'Innovative Engineering for Health' banners, each with the text 'Applications invited from companies and academic researchers worldwide' and 'Apply by 10 December 2012'. The bottom of the page features a large banner for the '2013 Cellular & Molecular Bioengineering Conference' in Waimea, Hawaii, from January 2-5, 2013, with links for 'SPONSORSHIP', 'REGISTRATION', 'HOTEL & TRAVEL', and 'ABSTRACTS'.

www.bmes.org/aws/BMES/pt/sp/home_page

RENEW JOIN Login

Home | Calendar | Follow us: f t y w

Advancing Human Health and Well-Being™

Students
Research
Industry

Annual Meeting
Atlanta: Oct. 24-27, 2012
For more Annual Meeting information and registration, **CLICK HERE!**

To search for presentations and plan your personal schedule for the **BMES 2012 Annual Meeting**, **click here!**

2013
BMES ANNUAL CELLULAR & MOLECULAR BIOENGINEERING CONFERENCE
Formerly SFBM Scientific Conference
JANUARY 2-5, 2013
Hapuna Beach Prince Hotel
Waimea, Hawaii
www.BMES.org/cmbconf

SPONSORSHIP | REGISTRATION | HOTEL & TRAVEL | ABSTRACTS

News

10/27/2012
Annual Meeting Daily Update: October 27, 2012
Day two of the meeting features talk by legendary civil rights leader, career events and dynamic scientific presentations.

10/26/2012
Material shows promise in aiding regeneration of injured spinal cord, Northwestern researchers find
The same materials used for re-absorbable sutures could one day aid

<keyword> SEARCH

None at this time.

Innovative Engineering for Health
Applications invited from companies and academic researchers worldwide
Apply by 10 December 2012
wELCOME trust EPSRC

Innovative Engineering for Health
Applications invited from companies and academic researchers worldwide
Apply by 10 December 2012

Atlanta
BMES
BIOMEDICAL ENGINEERING SOCIETY™
2012 ANNUAL MEETING
October 24-27, 2012
Georgia World Congress Center
Atlanta, Georgia
Hosted by Georgia Institute of Technology and Emory University
Presented in partnership with the American Society of Mechanical Engineers
Julia Robinson
jrobinso@bmes.org
www.bmes.org

Design Challenge

- o Break into Boe-Bot groups.
- o Design a surgical device to laparoscopically remove a tumor using the materials given.
 - o Chop sticks, 2 paper clips, 3 rubber bands, 8.5"x11" sheet of paper, plastic lid, plastic spoon, 1 foot of tape.
- o Starting at 10:20am, we will conduct a competition to determine who can perform the surgery in the fastest time.
 - o One or more members of your group may perform the surgery.
 - o Only the existing access holes may be used.
 - o Your goal is to surgically remove the tumor without damaging it and without disturbing the surround tissue.
 - o Disturbing the tissue or damaging the tumor will disqualify the group.
 - o We will record the time required to successfully remove the tumor.
- o The group who successfully removes tumor the fastest wins. The members of the winning group are exempt from taking the next quiz and will receive a 10.