Biomedical Engineering addresses the entire scope of medical intervention including engineering-based study/research on fundamental physiology and pathophysiology; the design, development and translational deployment of new biomedical technologies for advanced diagnostics, targeted therapeutics, and tissue-organ regeneration, as well as new healthcare quality systems. Biomedical engineering at Texas A&M University is one of the oldest academic programs in the United States.

Research

Our research has resulted in new patents, new companies and new economic activity. With increasing demands for quality medical devices, procedures and improved cost-effectiveness, we are positioned to lead the way in the development, testing and commercialization of products, systems and technologies.

$7.6 M in Research Expenditures (2016)

- 67 patents & disclosures filed and 11 start-up companies created, including one exit through acquisition by Medtronic, Inc.
- 100 refereed journal papers in 2015

Key Healthcare Trends

Committed to solving the world’s greatest health problems through the exploration of new ideas, integrated research and innovation, the Department of Biomedical Engineering at Texas A&M University is producing the next generation of biomedical engineers; developing new technologies and new jobs; and achieving revolutionary advancements for the future of health care. The biomedical engineering program has unique strengths in biomedical optics, cardiovascular biomechanics and biomaterials and maintains its translational and entrepreneurial focus in regenerative engineering/medicine, biomedical diagnostics/theranostics, telemedicine/health, precision intervention and biomedical augmentation. The department’s faculty members are internationally recognized and engaged in collaborative relationships that span engineering, physical and natural sciences, medicine, and veterinary sciences.

The department’s vision is to be a global leader in biomedical engineering by working to solve the world’s greatest health problems. Through quality teaching, mentoring, experiential learning and excelling in professional and public service, the department aims to fulfill its goal of providing innovative research solutions that advance human health.

Enrollment (Fall 2016)

<table>
<thead>
<tr>
<th></th>
<th>Undergraduate</th>
<th>Graduate</th>
<th>Total Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate</td>
<td>327</td>
<td>120</td>
<td>447</td>
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</table>

Degrees Awarded (Fall 2016)

<table>
<thead>
<tr>
<th></th>
<th>Bachelor’s</th>
<th>Master’s</th>
<th>Ph.D.</th>
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<tbody>
<tr>
<td>Bachelor’s</td>
<td>72</td>
<td>11</td>
<td>12</td>
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</table>

Diversity

<table>
<thead>
<tr>
<th></th>
<th>Undergraduate</th>
<th>Graduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>47%</td>
<td>35%</td>
</tr>
<tr>
<td>Minority</td>
<td>23%</td>
<td>17%</td>
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</table>

Student Quality (Fall 2016)

<table>
<thead>
<tr>
<th></th>
<th>National Merit Scholars</th>
<th>National Hispanic Scholars</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>9</td>
<td>9</td>
</tr>
</tbody>
</table>

Undergraduate Tracks

- Bioinstrumentation
- Biomaterials
- Biomechanics
- Biomolecular & Cellular Engineering

Biomedical At A Glance

65% of all biomedical engineering undergraduates ranked among the top 10% of their high school graduating class.

More than $2 M in graduate student fellowships awarded to admitted biomedical engineering students in 2016.

The department’s graduate students are holders of five National Science Foundation fellowships, four Louis Stokes Alliance for Minority Participation Bridge to the Doctorate fellowships and 17 university fellowships.

@bmenTAMU  TAMUbmen
Department Centers & Laboratories

- Bioinspired Translational Microsystems
- Bio-Instructive Materials
- Biomaterials
- Biomedical Device
- Biomedical Optics
- Biosensor Systems and Materials
- BMEN Prototyping
- Cardiac Mechanics
- Cellular Biomechanics
- Center for Bioelectronics, Biosensors and Biochips
- Center for Remote Healthcare Technology
- Embedded Signal Processing
- Musculoskeletal Tissue Engineering
- Nanomaterials, Stem Cells and Tissue Engineering
- National Center for Therapeutics Manufacturing
- Nuclear Magnetic Resonance Radiofrequency
- Optical and Molecular Imaging
- Optical Bio-Sensing
- Optical Diagnosis and Imaging
- Pharmacoengineering
- Therapeutic Drug Development and High-Resolution Imaging
- Tissue Microscopy

Select Capabilities & Resources

- 9 classrooms, each with seating for 40-100
- 40-station computer laboratory
- 12 National Instruments ELVIS, 2 in undergraduate dry laboratory
- 3 wet lab floors comprise 28 biomedical engineering research wet labs, 38 functioning fume hoods and 12 biosafety cabinets
- 4 teaching laboratories and 5 shared research laboratories
- Biofabrication laboratory with UV lithography, Scanning Electron Microscope (SEM) and Atomic Force Microscope (AFM)
- Imaging histology, molecular biology laboratory with microplate reader, vibrotome, inverted bright field/phase/fluorescence microscope and automated slide scanner
- Biomaterials preparation and characterization shared research laboratory with HPLC with mass spectrometer, ellipsometer, contact angle goniometer
- Biosafety Level 2 (BL-2) cell and tissue culture lab with biosafety cabinets, incubators, -80, -20, 4°C storage, autoclaves, confocal microscope
- Prototyping laboratory with Gravograph laser engraving system, Resonetics Excimer laser system
- HPLC with gas mass spectrometer and gas chromatograph
- Musculoskeletal Tissue Engineering
- Biomechanics Experiential Learning Laboratory with VICON Motion Capture system, TestResources 12kN Axial/Torsion Load Frame, LaVision PIV system
- National Center for Therapeutics Manufacturing
- Machining and device shop with Monarch lathe & Bridgeport milling machine

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