Biomedical Engineering
Today’s Agenda

- BME Defined
- Curriculum
- Moving into BMEN
- Fall 2014 Enrollment
- Spring 2015 Graduation Statistics
- Career Paths
- Program Highlights
Biomedical Engineering Identifies, Analyzes, and Solves Medical Problems Using Engineering Principles and Methodologies
Areas of focus in BME

- Bioinstrumentation
- Medical Imaging
- Biomechanics
- Orthopedics Engineering
- Biomaterials
- Tissue Engineering
- Neural Engineering
Bioinstrumentation

• It is the application of electronics and measurement techniques to develop devices used in diagnosis and treatment of disease.

Electronic Skin Patch With Memory and Drug Delivery Capability Could Treat Parkinson’s
Medical Imaging

• Combines knowledge of a unique physical phenomenon (sound, radiation, magnetism) with high speed electronic data processing, analysis and display to generate an image.

General Electric's Vscan portable ultrasound scanner
Biomechanics

- Applies classical mechanics (statics, dynamics, fluids, solids, thermodynamics, and continuum mechanics) to biological or medical problems.
Biomaterials

Finger joint: silicone rubber
Breast implant: silicone
Heart valve: polyester, stainless steel
Hip joint: titanium
Artificial heart: polyurethane, metal
Intraocular lens (IOL): poly(methyl methacrylate)
Tissue Engineering

- These areas utilize the anatomy, biochemistry and mechanics of cellular and sub-cellular structures to understand diseases and to intervene at very specific sites.

First Artificial Trachea Implants Breathe Life into Tissue Engineering
Curriculum

- Three focus areas
  - Biomechanics
  - Biomaterials
  - Bioinstrumentation

- 3+1 Program
  - 3 lectures
  - 1 lab

- Coursework layout
  - Freshman
  - Sophomore-Junior
  - Senior
Entry to the BMEN Major

- Holistic approach that evaluates:
  - Grades
  - Cumulative
  - Math, Science, and Engineering course grades
  - Essay
  - Activities & achievements
  - Career goals
Fall 2014 Enrollment

• 267 undergraduates
• 118 graduates
• 21 faculty
• 44% female
• 19% underrepresented group members
• National Merit Scholars – 28
• National Merit Semi-Finalist – 9
• National Scholars – 11
• 68% ranked in top 10% of high school graduating class
Spring 2015 Graduates

- Bachelor’s Awarded: 67
  - Bachelors to women: 27
  - Bachelors to men: 40
- Average Cumulative GPA: 3.542
After Graduation

- Students pursue opportunities in:
  - Industry
  - Medical school
  - Graduate/professional school

- They pursue career paths in:
  - Medical Device Industry
  - Research & Development
  - Field Clinical Engineering
  - Consulting
  - Clinical Engineering
  - FDA
  - Academia

- TAMU avg. starting salary: $61,537
Program Highlights

• Internships & co-ops

• Undergraduate research

• Study abroad experiences
  • Germany, Wales, Rwanda

• Student organizations
Questions?

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