Mechanical & Industrial Engineering

Mario A. Rotea
Professor and Department Head
Outline

- Undergraduate Degree Programs
- Graduate Degree Programs
- The Faculty
- The Research
- Summary
Undergraduate Programs – BSME & BSIE

- Healthy number of BS degrees
- 5-year averages: 87% ME, 13% IE

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<th>Year</th>
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<td>’06</td>
<td>5</td>
<td>16</td>
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<td>’07</td>
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<td>20</td>
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<td>’08</td>
<td>11</td>
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Reasonable goal

• 100-120 graduate students enrolled per year
• 35 graduate degrees per year (.5PhD/Faculty/year, 1MS/Faculty/year)
The Faculty

4 Assistant Profs. (17%)
9 Profs. (39%)
10 Associate Profs. (39%)

Honors & Awards
1 NAE (Emeritus)
10 Fellows (National/International)
3 NSF CAREER Awardees
2 NSF Young Investigator Awardees
2 ONR Young Investigator Award
20 books (edited or co-authored)

Control & Dynamical Systems 3
Design of Mechanical Systems 3
IE & Operations Research 6
Materials & Manufacturing 3
Thermodynamics & Fluids 8

FY’09 Approved Searches
Wind Energy (1)
Materials (1)
New Faculty in FY’09

- Hari Balasubramanian
  - PhD (’06) and MS (’02) from Arizona State University
  - Operations research applied to healthcare delivery

- Matthew Lackner
  - PhD UMass (’07), MS (’03) from MIT
  - Wind energy
FY’09 Faculty Searches

• Materials
  – Offer extended to outstanding candidate with great potential for interdisciplinary work (PSE, ChE) in the mechanics of nanomaterials
  – Decision expected next week

• Wind Energy
  – Search refocused to find strongest candidate with interest and ability to contribute to wind energy program (not necessarily 100% effort)
  – Search committee has provided their recommendation
  – Offer will be extended shortly
The Research

• Research & Development ~ 4.5M/year
• Multiple programs
  – Large size
    • Computational and experimental fluid dynamics
    • Human performance and cognitive engineering
    • Wind energy systems
  – Medium and small size
    • Biomechanics and systems biology
    • Condition monitoring and controls
    • Environmental and energy economics/policy
    • Logistics & supply chain management
  – Emerging
    • Bioengineering: devices, biomechanics, health care delivery services
• Extension
  – DOE Industrial Assessment Center (Energy Utilization)
  – Massachusetts Energy Efficiency Partnership (education, training)
Federal Funding

• Large number of proposals submitted to major federal agencies (NSF, NIH, DOE, DOD, DOT) in FY’09
  – Federal funding necessary for PhD production
  – Program reputation grows with federal funding

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<th>FY’08</th>
<th>FY’09</th>
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<tr>
<td>Proposals*</td>
<td>20 ($6.6m)</td>
<td>31 ($17.5m)</td>
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<td>Awards*</td>
<td>16 ($6.4m)</td>
<td>16 ($2.4m)</td>
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• FY’09 proposals in energy and healthcare
  – 3 proposals in healthcare (NSF, NIH)
  – 11 proposals in wind energy (NSF, DOE)

* Need validation from OCGA records
Summary

• Program is great and getting better
  – Good number of proposals submitted to federal programs in FY’09
  – Funding would lead to more graduate students

• The Challenge
  – Attract and retain talent...from students to faculty

• Ideas from IAB to generate resources always welcome

• I hope to see you at lunch today