FAMU-FSU College of Engineering:
College Update for Fall 2014 Faculty Meeting

Quality Growth & Diversity

FAMU-FSU CoE
“Two Universities-One College-Twice the Opportunities”
OUTLINE

• Status of BOG Study on College
• Administrative Changes & New Employees
• Achievements: Students, Faculty, Alumni etc.
• Strategic Vision and Goals
• Development Needs to Achieve Vision and Goals
• Question & Answer Session
Status of BOG Study on College

- Collaborative Brain Trust (CBT) Charge and Timeline
  - Model Options
    - Maintain Joint College
    - Two Colleges of Engineering with Differentiated Programs
  - Timelines
    - Data-gathering phase
      - conducting interviews & focus group meetings; developing job forecasts; analysis from ABET perspective; expectations from Title VI of Civil Rights Act and the Fordice decision etc.
    - Draft document presenting the facts due **November 19, 2014**
    - Final report due **December 19, 2014**
    - Public input at future BOG meeting after submission of final report
    - Presentation of final report to BOG and Legislature-Early 2015
    - Decision on model selection by BOG and Legislature
Administrative Changes

- Joint Management Council
- Executive Council
- Shared Governance
  - Engineering, Faculty, Staff, and Student Advisory Councils
Introduction of New Faculty and Staff

- Faculty
  - CBE
  - ECE
  - ME

- Staff
  - CBE
  - ECE
  - ME
TOTAL ENROLLMENT AT THE FAMU-FSU COLLEGE OF ENGINEERING
as of 8/29/2014

FALL, CALENDAR YEAR
## FAMU-FSU College of Engineering
### Fall 2014 Enrollment
#### Undergraduate

<table>
<thead>
<tr>
<th>Major</th>
<th>FAMU</th>
<th>FSU</th>
<th>TOTAL</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical &amp; BME</td>
<td>17</td>
<td>236</td>
<td>253</td>
<td>11%</td>
</tr>
<tr>
<td>Civil &amp; ENV.</td>
<td>14</td>
<td>240</td>
<td>254</td>
<td>11%</td>
</tr>
<tr>
<td>Computer</td>
<td>20</td>
<td>64</td>
<td>84</td>
<td>4%</td>
</tr>
<tr>
<td>Electrical</td>
<td>25</td>
<td>138</td>
<td>163</td>
<td>7%</td>
</tr>
<tr>
<td>Industrial</td>
<td>13</td>
<td>78</td>
<td>91</td>
<td>4%</td>
</tr>
<tr>
<td>Mechanical</td>
<td>19</td>
<td>337</td>
<td>356</td>
<td>15%</td>
</tr>
<tr>
<td>Pre-Engineering</td>
<td>213</td>
<td>904</td>
<td>1117</td>
<td>48%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>321</strong></td>
<td><strong>1997</strong></td>
<td><strong>2318</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

(14%) (86%)
<table>
<thead>
<tr>
<th>Major</th>
<th>FAMU</th>
<th>FSU</th>
<th>TOTAL</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomedical</td>
<td>1</td>
<td>10</td>
<td>11</td>
<td>3.5%</td>
</tr>
<tr>
<td>Chemical</td>
<td>2</td>
<td>25</td>
<td>27</td>
<td>8.5%</td>
</tr>
<tr>
<td>Civil</td>
<td>6</td>
<td>44</td>
<td>50</td>
<td>16%</td>
</tr>
<tr>
<td>Electrical</td>
<td>8</td>
<td>76</td>
<td>84</td>
<td>26%</td>
</tr>
<tr>
<td>Industrial</td>
<td>4</td>
<td>69</td>
<td>73</td>
<td>23%</td>
</tr>
<tr>
<td>Mechanical</td>
<td>6</td>
<td>68</td>
<td>74</td>
<td>23%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>27</strong></td>
<td><strong>292</strong></td>
<td><strong>319</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

(8.5%) (91.5%)
Achievements: College Ranking

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>UF CoE (1910)</td>
<td>4700: 2230 = 2.1</td>
<td>38</td>
<td>42</td>
</tr>
<tr>
<td>UCF CoE (1968)</td>
<td>6100: 1350 = 4.5</td>
<td>72</td>
<td>81</td>
</tr>
<tr>
<td>USF CoE (1964)</td>
<td>3650: 830 = 4.4</td>
<td>105</td>
<td>110</td>
</tr>
</tbody>
</table>

### Ranking Methodology

<table>
<thead>
<tr>
<th>Metrics</th>
<th>Weighting Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quality Assessment</strong></td>
<td></td>
</tr>
<tr>
<td>Peer Assessment (Deans &amp; Graduate Deans)</td>
<td>0.25</td>
</tr>
<tr>
<td>Recruiter Assessment</td>
<td>0.15</td>
</tr>
<tr>
<td><strong>Student Selectivity</strong></td>
<td>0.10</td>
</tr>
<tr>
<td>Mean GRE Quantitative Score</td>
<td>0.0675</td>
</tr>
<tr>
<td>Acceptance Rate</td>
<td>0.0325</td>
</tr>
<tr>
<td><strong>Faculty Resources</strong></td>
<td>0.25</td>
</tr>
<tr>
<td>Student-Faculty Ratio (PhD-0.075; MS-0.0375)</td>
<td>0.1125</td>
</tr>
<tr>
<td>% Faculty in NAE</td>
<td>0.0750</td>
</tr>
<tr>
<td>Doctoral Degrees Awarded</td>
<td>0.0625</td>
</tr>
<tr>
<td><strong>Research Activity</strong></td>
<td>0.25</td>
</tr>
<tr>
<td>Total Research Expenditures</td>
<td>0.15</td>
</tr>
<tr>
<td>Average Research Expenditure per Faculty</td>
<td>0.10</td>
</tr>
</tbody>
</table>
### USN&WR Program Rankings
(Based only on peer assessment)

<table>
<thead>
<tr>
<th>Program</th>
<th>2013</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biomedical</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Chemical</td>
<td>NR</td>
<td>NR</td>
</tr>
<tr>
<td>Civil</td>
<td>108</td>
<td>100/145</td>
</tr>
<tr>
<td>Electrical</td>
<td>102</td>
<td>102/177</td>
</tr>
<tr>
<td>Industrial</td>
<td>57</td>
<td>65/87</td>
</tr>
<tr>
<td>Mechanical</td>
<td>77</td>
<td>88/170</td>
</tr>
</tbody>
</table>
Other College Recent Rankings

- ME ranked as 27\textsuperscript{th} (128) best PhD program by PhD.org
- CoE ranked 12\textsuperscript{th} (357) for African American BS engineering degrees awarded (ASEE)
- CoE ranked 26\textsuperscript{th} (221) for CE degrees awarded (ASEE)
- CoE ranked 5\textsuperscript{th} (364) for African American tenured/tenure track faculty (ASEE)
- CoE 15\textsuperscript{th} (154) for African American PhDs awarded (tied for 2\textsuperscript{nd} with MIT and Purdue only a few short years ago!)
Sample Achievements: Students

- Our students continue to excel individually and in teams
  - Admission into top graduate programs
  - Frequent spotlight on our students at both institutions
  - Recognition in student research and design competitions
    - FES, Fulbright, SAE, IEEE and Research paper awards
  - Students demonstrate leadership in addition to academic excellence
Sample Accomplishments: Graduate Students

- Awards and Recognitions
Sample Accomplishments: Alumni

- Recognitions and Advancements
FAMU-FSU College of Engineering Research

- Faculty
  - Total Number of Faculty: 92 (2014)
  - Annual Research Expenditure: $20 million
- Research covers most of the 14 NAE Grand Challenges
- Research Areas of Expertise
  - Polymers, materials and nanotechnology
  - Renewable, advanced and sustainable energy
  - Biomedical imaging, cellular and tissue engineering
  - Advanced transportation systems, structures and hydraulics
  - Environmental sustainability and water resources
  - Advanced power systems and energy storage
  - Intelligent systems, controls and robotics
  - Communication, information technology, and cyber security
  - Active and supersonic flow controls
  - Superconductivity materials and applications
  - Manufacturing and Operations Research
Make solar energy affordable
- Improve cell efficiency, manufacturing cost and storage

Provide energy from fusion
- Scale up in efficient, economical and environmentally benign way

Develop carbon sequestration methods
- Capture and store deep underground; minimize global warming

Manage the nitrogen cycle
- Maintain sustainable food supply with minimal human disruption of nitrogen cycle

Provide access to clean water
- Water quality, location, political and economic barriers affect quality of human life

Restore and improve urban infrastructure
- Infrastructure (for water, sewer, transportation, power grids etc.) all with failing (D) grade

Advance health informatics
- Acquisition, management and usage (improve healthcare, response to emergencies, pandemic etc.)

Engineer better medicines
- Use genetic science, personalize medicine, fight drug-resistant infections etc.

Reverse-engineer the brain
- Create thinking machines to emulate human intelligence to improve health and quality of human life

Prevent nuclear terror
- Nuclear security (secure materials, detect at distance and culprit, neutralize devices, emergency response etc.)

Secure cyberspace
- Personal privacy and national security; confidentiality and integrity of data transmittal

Enhance virtual reality
- Powerful tools for training practitioners and treating patients; entertainment, industrial design etc.

Advance personalized learning
- Developing teaching tools that optimize personalized learning (not one size fits all teaching approach)

Engineer the tools for scientific discovery
- Engineers (create, design and build) to partner closely with scientists (explore, experiment and discover)
FAMU-FSU College of Engineering Research: Related Centers, Labs and Institutes

- National High Magnetic Field Laboratory (NHMFL)
- Energy and Sustainability Center (ESC)
- Future Renewable Electric Energy Delivery and Management (FREEDM) Systems Center
- Center for Advanced Power Systems (CAPS)
- Institute for Energy Systems, Economics and Sustainability (IESES)
- Aero-propulsion, Mechatronics and Energy Center (AME)
- High Performance Materials Institute (HPMI)
- Applied Superconductivity Center (ASC)
- Center for Intelligent Systems, Controls and Robotics (CISCOR)
- Florida Center for Advanced Aero-propulsion (FCAAP)
- University Transportation Center (UTC) (for accessibility and safety for an aging population)
Key Research Accomplishments

- Faculty Accomplishments and Recognitions: Major Grants, Fellowships & Awards
Key Faculty Teaching Achievements

- FSU 2013 - 2014 Distance Learning Award for Excellence in Online Teaching

- FSU 2012-2013 Distance Learning Award for Excellence in Online Teaching and Course Design
Other College Successes

- Resolved Salary Inequity between FAMU and FSU Faculty
- Recruited one College Entrepreneur-in-Residence
- Secured six specialized new teaching faculty lines
- Had funding approved for construction/renovation
- Obtained technology funds from FAMU and FSU

Policy
- New IP policy between FAMU and FSU
- Revised P&T Criteria and Procedures
- Retention of faculty and staff

Development
- Secured $85 million software donation from Siemens
- Hired a new FSU development officer
- On the verge of securing a FAMU development position
FAMU-FSU College of Engineering: Strategic Vision and Goals

- Produce technically sound graduates with business and entrepreneurial skills (*Double Enrollment; 10% of FAMU & FSU*)
- Enhance research profile and stature (*Double Expenditures*)
- Improve national ranking of College, academic departments and degree programs (*Within top 50*)
- Have strong impact on the local and State economies
- Promote and enhance active development/fundraising
... Achieving Strategic Vision and Goals

- Be Student-Centered and Entrepreneurial College
- Ensure Research and Teaching Go Hand-in-Hand
- Have Dynamic and Exciting Engineering Programs & Facilities
- Good & Hardworking Students
- Dedicated and Enthusiastic Staff
- Committed and Passionate Faculty
- Caring and Supportive Alumni & Friends
Development Needs to Achieve Vision & Goals

Development Priorities *(Named/Endowed)*

- Scholarships, Fellowships, Lectureships, Professorships & Chairs
- Engineering Support Services Center
- Program for Undergraduate Research Experiences (PURE)
- Academic Preseason Program
- Honors Academy with Global Experiences
- Entrepreneurial 21st Century College
- Senior Design Projects
- Annual Recognition Ceremony
- Facilities and Infrastructure
- Discretionary Funds for New Initiatives

Strengthen Engagement with Alumni
- National Alumni Network Organization (NANO)
## Building Your Legacy

### Giving Opportunities

**CREATING THE COLLEGE OF ENGINEERING FOR THE NEXT 30 YEARS**

<table>
<thead>
<tr>
<th>Opportunity</th>
<th>Annual</th>
<th>Endowment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Entrepreneurial 21st Century College of Engineering – Senior Design Projects, Labs</td>
<td>$4,000 - $5,000</td>
<td>$100,000 - $125,000</td>
</tr>
<tr>
<td>Endowed Lectureship</td>
<td></td>
<td>$125,000</td>
</tr>
<tr>
<td>Endowed Professorship</td>
<td></td>
<td>$250,000</td>
</tr>
<tr>
<td>Endowed Department Chair</td>
<td></td>
<td>$2,000,000</td>
</tr>
</tbody>
</table>

**ENABLING THE GROWTH AND DEVELOPMENT OF THE ENGINEERING STUDENT EXPERIENCE**

<table>
<thead>
<tr>
<th>Program</th>
<th>Annual</th>
<th>Endowment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Program for Undergraduate Research Experiences</td>
<td>$5,000 per student</td>
<td>$150,000 per student</td>
</tr>
<tr>
<td>Academic Preseason Program for Incoming Freshmen</td>
<td>$5,000 per student</td>
<td>$125,000 per student</td>
</tr>
<tr>
<td>Center for Engineering Student Support</td>
<td>$5,000 per student</td>
<td>$125,000 per student</td>
</tr>
<tr>
<td>Honors Academy with Global Experiences</td>
<td>$5,000 per student</td>
<td>$125,000 per student</td>
</tr>
<tr>
<td>Endowed Undergraduate Student Scholarships</td>
<td></td>
<td>$25,000</td>
</tr>
<tr>
<td>Endowed Graduate Fellowships</td>
<td></td>
<td>$50,000</td>
</tr>
</tbody>
</table>
THANK YOU FOR YOUR ATTENTION, DEDICATION, COMMITMENT AND HARDWORK!

- QUESTION AND ANSWER SESSION