School of Engineering

Town Hall Meeting

David Rosowsky, Dean of Engineering
November 2010
Accolades

- Awards and recognitions since our last meeting
Faculty Promotions
Yaron Danon, Professor
Matt Oehlschlaeger, Associate/tenure

Endowed Chair
Philippe Baveye, Kodak Chair (Env Eng)

New Faculty
Mishra Sandipan, Asst. Prof., MANE
David Mendonca, Assoc. Prof., ISE
Riccardo Bevilacqua, Asst. Prof., MANE
Philippe Baveye, Prof., CEE
Ryan Gilbert, Asst. Prof., BME
Shiva Kotha, Assoc. Prof., BME
Hiroki Yokota, Prof., BME

Additional faculty starting in January
Young Investigator Awards

David Corr (BME), NSF CAREER Award
Cynthia Collins (CBE), National Academies Keck Award
Liping Huang (MANE), DTRA Young Investigator Award
Peter Tessier (CBE), Pew Scholar in Biomedical Sciences
Nikhil Koratkar (MANE), Electrochem. Soc. Young Investigator Award
Matthew Oehlschlaeger (MANE), NSF PECASE Award

$1M Research Expenditures - 12 SoE Faculty in FY10

Mark Shephard, Suvranu De, Miki Amitay, Yaron Danon (MANE)
John Wen, Michael Shur, Bob Karlicek, Badri Roysam (ECSE)
Tarek Abdoun (CEE)
Dick Siegel (MSE)
Jon Dordick, Ravi Kane (CBE)
FY12 SoE Performance Plan

- Highlights
- Strategy
- Expectations
FY12 SoE Performance Plan

- The PLAN is ambitious and forward-looking
- The PRIORITIES are tightly aligned with those of the Institute
- The faculty and staff will be fully engaged in working toward our COLLECTIVE GOALS:
  - To provide a world-class educational environment for our students
  - To create an environment that engenders respect for all faculty, staff, and students
  - To build a culture that is conducive to learning and discovery
Topics addressed

- Faculty growth, faculty recruiting
- Clinical faculty and clinical conversion plan
- National Academy of Engineering
- PhD program growth, doctoral student recruiting
- Diversity
- Faculty and staff development
- SoE as “community” initiative: Building a community of scholars
- Recognizing, rewarding, and celebrating excellence
- Elevating our visibility, national reputation, and rankings
- Review of centers
- Enhancing the learning experience
- Departmental advisory councils
- Research initiatives
- Increasing participation in undergraduate research
- Flexible first-year
- Globalization of our students
- Enrollment management
- Graduate program reviews
- Engaging the Institute: creating value, uniqueness, and new opportunities
- Design
- On-campus Masters programs
Key initiatives

- Diversity
- Strategic research directions
- Developing and promoting collaborative academic programs
- Enrollment management
- Undergraduate education
- Faculty Recruiting
- Advancement
Diversity: students

- Benchmarking against peer/aspirants

- Survey best-practices among peer/aspirants that have been successful in recruiting and retaining students from underrepresented groups into engineering

- Prepare a set of specific recommendations to (a) implement or (b) forward to the President for consideration
Diversity: faculty

- Survey best-practices among peer/aspirants that have been successful in recruiting and retaining engineering faculty from underrepresented groups

- Outreach to colleagues at top universities to identify prospective faculty candidates, cultivate relationships, and develop a deeper pool of faculty applicants from underrepresented groups

- Continue to make diversity a TOP PRIORITY in faculty hiring in SoE, increase the percentage of women and minority faculty hired in the coming year
Enrollment management

We will continue to work closely with the Vice President of Enrollment to continue to reduce our undergraduate enrollment in SoE, consistent with the Rensselaer Plan, in order to:

(1) be competitive with our peer/aspirants in terms of class size as well as teaching and advising loads

(2) grow our research enterprise in order to expand our doctoral enrollments and bring our UG/G student ratios into alignment with our peer/aspirants

Target requested in FY12: limit first-year SoE enrollment in Fall 2011 to 625
Target requested in FY13: limit first-year SoE enrollment in Fall 2012 to 600
Undergraduate education

We will take steps to return SoE to national prominence in the areas of UNDERGRADUATE EDUCATION and INSTRUCTIONAL INNOVATION –

“Reigniting the Flame: an action plan for re-establishing Rensselaer as an innovator in engineering undergraduate instruction and a national leader in the dialog on engineering education” (12-month plan to be implemented in FY12)
Undergraduate education

Reigniting the Flame

An action plan for re-establishing Rensselaer as an innovator in engineering undergraduate instruction and a national leader in the dialog on engineering education

Undergraduate Engineering Education at Rensselaer

INNOVATION - COMMITMENT - PROMINENCE

EXAMPLES: 1-3 mos.
- unit-based plans
- BS-PhD longitudinal tracking
- website redevelopment
- Dean’s rollout

EXAMPLES: 3-6 mos.
- launch new website(s)
- target print pieces
- ASEE initiatives

EXAMPLES: 6-12 mos.
- first innovation seed grants
- SoE teaching excellence awards
- Center proposals (2) to NSF
- Master Teacher model
Faculty recruiting

Increasing the size of our faculty will have the following desired objectives for the School of Engineering and the Institute:

1. Faculty will be hired in **strategic areas for the Institute** and for the School of Engineering allowing us to build capacity for research and scholarship in key areas.

2. **Student/faculty ratios** will be brought down to desired levels, competitive with peer schools and ensuring we can provide the best possible educational experience for our students.

3. **Teaching loads** can be balanced across the School and lowered to levels competitive with peer schools, thereby enabling **growth in research** and in the size of our doctoral programs.
## A look back, a look ahead

<table>
<thead>
<tr>
<th>SoE:</th>
<th>FY05 Fall 04</th>
<th>FY06 Fall 05</th>
<th>FY07 Fall 06</th>
<th>FY08 Fall 07</th>
<th>FY09 Fall 08</th>
<th>FY10 Fall 09</th>
<th>FY11 Fall 10</th>
<th>FY12 Fall 11</th>
<th>FY13 Fall 12</th>
</tr>
</thead>
<tbody>
<tr>
<td>T/TT faculty</td>
<td>144</td>
<td>141</td>
<td>146</td>
<td>139</td>
<td>143</td>
<td>134</td>
<td>136</td>
<td>148</td>
<td>160</td>
</tr>
<tr>
<td>Research expenditure per faculty ($K)</td>
<td>290</td>
<td>347</td>
<td>356</td>
<td>354</td>
<td>369</td>
<td>370</td>
<td>370</td>
<td>370</td>
<td>380</td>
</tr>
<tr>
<td>Total annual research expenditures(^5) ($M)</td>
<td>41.7</td>
<td>48.9</td>
<td>52.2</td>
<td>49.2</td>
<td>52.8</td>
<td>46.9</td>
<td>50.4</td>
<td>55.5</td>
<td>60.8</td>
</tr>
<tr>
<td>Undergraduate enrollment</td>
<td>2729</td>
<td>2846</td>
<td>3042</td>
<td>3007</td>
<td>3087</td>
<td>3221(^3)</td>
<td>3150(^4)</td>
<td>3050(^4)</td>
<td>2950(^4)</td>
</tr>
<tr>
<td>Graduate enrollment, Troy (FT/PT)</td>
<td>530/57</td>
<td>505/55</td>
<td>530/48</td>
<td>502/44</td>
<td>506/48</td>
<td>491/50</td>
<td>500/50</td>
<td>550/50</td>
<td>600/50</td>
</tr>
<tr>
<td>Credit hours taught</td>
<td>48,176</td>
<td>49,893</td>
<td>54,766</td>
<td>54,109</td>
<td>56,156</td>
<td>TBA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UG student-to-faculty (T/TT) ratio(^1)</td>
<td>19.0</td>
<td>20.2</td>
<td>20.8</td>
<td>21.6</td>
<td>21.6</td>
<td>23.3</td>
<td>22.3</td>
<td>19.9</td>
<td>17.5</td>
</tr>
<tr>
<td>UG-to-G (FT) student ratio(^2)</td>
<td>5.1</td>
<td>5.6</td>
<td>5.7</td>
<td>6.0</td>
<td>6.1</td>
<td>6.6</td>
<td>6.0</td>
<td>5.3</td>
<td>4.7</td>
</tr>
<tr>
<td>Indirect returned to Institute ($M)</td>
<td>--</td>
<td>7.6</td>
<td>8.4</td>
<td>8.2</td>
<td>8.4</td>
<td>8.2</td>
<td>8.8</td>
<td>8.9</td>
<td>10.1</td>
</tr>
</tbody>
</table>

\(^1\) Target = 15:1  
\(^2\) Target = 3:1  
\(^3\) Includes 112 Co-terminal Masters (BS+MS) students  
\(^4\) Includes ~150 Co-terminal students  
\(^5\) Expenditures based on USN&WR data (a blended calculation)
Faculty growth

To meet the President’s call to **grow the T/TT faculty to 400 in the next three years**, the following commitment is requested for the next three years:

**FY12 (for positions to start Fall 2011)**  
20 faculty positions  
Includes five endowed chair positions already approved for searches  
Assuming 8 faculty departures, this brings SoE T/TT faculty total to 148

**FY13 (for positions to start Fall 2012)**  
20 faculty positions  
Assuming 8 faculty departures, this brings SoE T/TT faculty total to 160

**FY14 (for positions to start Fall 2013)**  
10-15 positions (TBD)  
Goal: 170 SoE T/TT faculty

NET GAIN: **34** SoE T/TT positions
Faculty growth and revenue

Engineering faculty are among the most productive faculty in garnering extramural research support (as individual investigators, multi-investigator teams, or large multi-unit or multi-university centers). Increasing the size of the SoE faculty will afford the greatest increase in extramural research funding to the Institute, with the associated indirect costs, as well as graduate tuition revenue from extramural grants. In FY09, the School of Engineering was responsible for more than $8.4M in indirect costs returned to the Institute and generated more than $4.7M in graduate tuition revenue. It is reasonable to anticipate that an increase in SoE faculty size of approximately 25% (34 additional faculty in the next three years) will result in about $3.25 M in additional revenue per year*.

*This estimate may be conservative as retiring faculty are replaced with more research-active faculty and as the number and size of larger center-level grants increases.
Faculty recruiting

We will:

1. Align searches with strategic priorities of the Institute and the School

2. Develop the deepest possible applicant pool from highly qualified candidates from top universities and diverse backgrounds including those from underrepresented groups

3. Hire those with the greatest promise for excellence in teaching and scholarship

4. Ensure resources are available (financial, infrastructure, and mentoring) to maximize their likelihood of success

5. Complete searches in a timely manner and extend competitive offers as early as possible in the national hiring cycle
The **Plan** is

- Ambitious
- Forward-looking
- Engaging

Available online: November 15

Open comment period: through December 1
SoE Advancement

- New strategy
- Dean’s engagement with alumni
- Constituent-based model
- SoE priorities
- Role of Department Heads and Faculty
External Communications

- Strategy
- FY11 outcomes
- Reigniting the Flame initiative
- Continued website refresh
KARLICEK NAMED NEW DIRECTOR OF SMART LIGHTING ENGINEERING RESEARCH CENTER

Robert F. Karlicek Jr., right, has been named the new director of the Rensselaer Polytechnic Institute School of Engineering’s Industry-Sponsored Research Center (ISRC) for Smart Lighting Systems.

Karlicek has been a leader in the research and development of smart lighting systems, with a focus on improving energy efficiency and reducing costs for companies that use lighting systems. He has been involved in numerous projects related to smart lighting technology, including developing new methods for controlling and monitoring lighting systems.

Karlicek has worked in the lighting industry for over 25 years, and has held leadership roles at several companies, including Philips Lighting and GE Lighting. He has also served as the president of the Illuminating Engineering Society (IES) and has received numerous awards for his contributions to the field of lighting technology.

Karlicek’s appointment follows the recent announcement that the ISRC for Smart Lighting Systems will be renamed to the Rensselaer School of Engineering’s Industry-Sponsored Research Center (ISRC) for Smart Lighting Systems. The ISRC is a collaborative effort between the school and industry partners to develop new technologies and methods for improving lighting systems.

The ISRC for Smart Lighting Systems is part of the Rensselaer School of Engineering’s ongoing efforts to advance the field of engineering and develop new technologies that can improve the quality of life for people around the world.
Rensselaer Congratulates Anak Agung Julius for winning the Faculty Early Career Development Award (CAREER) from the National Science Foundation (NSF)

Dr. Julius will use the award for his research into computational analysis of hybrid systems.

"Dr. Julius is an outstanding young researcher, and the integration of his work into our curriculum is exciting," said Rensselaer Dean of Engineering.

"Anak’s theoretical research in the development between discrete and continuous controls, systems theory, and systems theory has important and far-reaching applications to mathematical modeling and the analysis of engineering systems.

Julius joined Rensselaer in 2008, from a postdoctoral fellowship at the University of Pennsylvania, he received his bachelor's degree in electrical engineering from the Bandung Institute of Technology in Indonesia, and his master's and doctoral degrees in applied mathematics from the University of Twente in the Netherlands.
External Communications

- Strategy
- FY11 outcomes
- Reigniting the Flame initiative
- Continued website refresh
SoE Centers

- CITE - Center Infrastructure, Transportation and the Environment (refresh)
- NSF Smart Lighting ERC (continued)
- CeMSIM – Center for Modeling, Simulation and Imaging in Medicine (new)
- Center for Flow Physics and Control (new-proposed)
New Faculty (F10, S11)

- BME (3)
- MANE (4)
- CEE (3)
- ISE (1)
- CBE (1)
Lower UG enrollment

New fundraising model

New research centers

New Faculty (F10, S11)
- BME (3)
- MANE (4)
- CEE (3)
- ISE (1)
- CBE (1)

PLUS:
- Equity model and implementation
- Clinical faculty model restructuring
- Faculty hiring strategy for FY12-14
- Approved searches for five endowed chairs in SoE
Example: $500K faculty equity request

- Faculty equity
- Faculty startup
- Emergency Financial Aid
- Deferred maintenance
- Teaching laboratory upgrades
- New scholarships

Example: $500K faculty equity request
A look ahead

- BSES program
- Global opportunities
- Service learning
- Engineering enrollments
- Engineering/Lally joint programs
- Clinical faculty
Community of Scholars

- Continuing initiatives
- Celebrating achievements, success
- Recognizing excellence
- Building community
- Support across the School
- Work-place of choice
Global economic crisis

- Observations
- Expectations
- Opportunities
Open Forum

- Question and answer