New Board Members

Mark Cannata
Tellabs
Dallas, TX

Lloyd Lund
L-3 Communications
Waco, TX

Daryl Sims
ExxonMobil
Houston, TX

Danny Meyer
Shell Trading
Houston, TX

BU ECS Board of Advocates

Dean’s Report
Fri., 29-Sept-06
Mayborn Museum, Baylor University

Dean’s Report Agenda

1. Miscellaneous items
   • Leadership, Personnel, Development, Board scholarship, ABET, Globalization, US News Ranking, Board meeting w/ President Lilley and Provost O’Brien

2. Enrollment information

3. Strategic initiatives
   • Follow-on sessions devoted to strategic initiatives

Now I’m a Harvard Graduate

“Leadership Devotionals” for “Leadership Committee”
Evaluating “situations” for leadership analysis
Putting approaches to work (herds of cats remain)
Wishful for time to review and evaluate

Institute for Management and Leadership in Education

1. Miscellaneous items

Another new face- Mr. Rob Kennedy

Culture of Philanthropy

Another new face- Mr. Rob Kennedy

• BU Development Office reorganized
• Mr. Rob Kennedy assigned to ECS
• Numerous visits already made
• Plan to broaden sphere of contacts

New Faces; Lost Faces

New Face | Lost Face
---|---
Dr. Eunjee Song - Computer Science/Software Engineering - Ph.D. Colorado St.
Mr. Rishi Sriram - Student Success Specialist - To: Associate Director for Housing Administration and Academic Initiatives

Another new face- Mr. Rob Kennedy

• BU Development Office reorganized
• Mr. Rob Kennedy assigned to ECS
• Numerous visits already made
• Plan to broaden sphere of contacts
Development 101

- Culture of Philanthropy
- Baylor Development (Then and Now)
- Development Activities
- Your Role

And the Answer Is...

- $34,708.38
- And the Question is:
  - What is the book value of the Board Scholarship?
- $46,791.40
  - What is the market value of the Board Scholarship?
- The goal for the Spring ’07 meeting
  - $50,000 book value

ABET Is Coming to Town

- ECE, ME, EGR submitted Self Study
- Course notebooks prepared and Program Objectives assessed
- Team visits on 8-10-Oct-06
  - Board members participating in Monday luncheon
- Official notification received Summer ’07

Globalization

- Pilot Course
  - Global Business Communications
  - 16 students
  - Engineering Economics, Technical Speaking, Technical Writing
  - Assessed vs. existing
- Study Abroad
  - Next step- Summer 2007
  - Partnership w/ Univ. Shanghai for S&T, Thunderbird U (MBA) & BU Business School
  - Corporate projects for six weeks in Shanghai

Rankings & President/Provost

US New & World Report Rankings
- BU ECS ranked # 20
- Score = 3.1; same as last year
- Last year ranked #21

ECS Board meets with President & Provost
- Bill Mearse, Steve Smith, Jim McDonough, Matt Watson
- Mon, 28-Aug-06
- Board did a great job
- P & P attentive, offered comments

Freshman Enrollment

ECS Entering Freshmen

<table>
<thead>
<tr>
<th>Year</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>194</td>
<td>214</td>
<td>196</td>
<td>189</td>
<td>195</td>
<td>188</td>
<td>201</td>
</tr>
</tbody>
</table>

Freshmen SAT Scores

<table>
<thead>
<tr>
<th>Year</th>
<th>SAT Score</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td></td>
<td>1206</td>
<td>1221</td>
<td>1209</td>
<td>1239</td>
<td>1226</td>
<td>1256</td>
<td>1266</td>
</tr>
<tr>
<td>2001</td>
<td></td>
<td>1175</td>
<td>1176</td>
<td>1180</td>
<td>1190</td>
<td>1196</td>
<td>1213</td>
<td>1150</td>
</tr>
<tr>
<td>2002</td>
<td></td>
<td>1175</td>
<td>1176</td>
<td>1180</td>
<td>1190</td>
<td>1196</td>
<td>1213</td>
<td>1150</td>
</tr>
<tr>
<td>2003</td>
<td></td>
<td>1175</td>
<td>1176</td>
<td>1180</td>
<td>1190</td>
<td>1196</td>
<td>1213</td>
<td>1150</td>
</tr>
<tr>
<td>2004</td>
<td></td>
<td>1175</td>
<td>1176</td>
<td>1180</td>
<td>1190</td>
<td>1196</td>
<td>1213</td>
<td>1150</td>
</tr>
<tr>
<td>2005</td>
<td></td>
<td>1175</td>
<td>1176</td>
<td>1180</td>
<td>1190</td>
<td>1196</td>
<td>1213</td>
<td>1150</td>
</tr>
<tr>
<td>2006</td>
<td></td>
<td>1175</td>
<td>1176</td>
<td>1180</td>
<td>1190</td>
<td>1196</td>
<td>1213</td>
<td>1150</td>
</tr>
</tbody>
</table>

Undergraduate Enrollment

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Students</th>
<th>ECS</th>
<th>BS</th>
<th>BU Avg</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ECS Enrollment as a Fraction of Baylor

<table>
<thead>
<tr>
<th>Year</th>
<th>% Fr</th>
<th>% UG</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>6.9</td>
<td>5.6</td>
</tr>
<tr>
<td>2001</td>
<td>7.6</td>
<td>5.6</td>
</tr>
<tr>
<td>2002</td>
<td>7.3</td>
<td>5.2</td>
</tr>
<tr>
<td>2003</td>
<td>5.6</td>
<td>4.6</td>
</tr>
<tr>
<td>2004</td>
<td>5.6</td>
<td>4.3</td>
</tr>
<tr>
<td>2005</td>
<td>6.3</td>
<td>4.7</td>
</tr>
<tr>
<td>2006</td>
<td>7.5</td>
<td>4.8</td>
</tr>
</tbody>
</table>

Enrollment Comparison (% UG)

<table>
<thead>
<tr>
<th>Aspiration</th>
<th>US News</th>
<th>Peer</th>
<th>Faith Based</th>
<th>Big 12</th>
<th>Wannabe</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.9</td>
<td>17.1</td>
<td>12.5</td>
<td>13.4</td>
<td>5.5</td>
<td></td>
</tr>
</tbody>
</table>

ECS Admissions Plan ‘07

**Baylor:**
- **Early Action 1**
  - Apply by October 15
  - Notified by December 1

- **Early Action 2**
  - Apply by December 1
  - Notified by January 15

**Regular Decision**
- Apply by February 1
- Notified by March 15

**ECS Changes:**
- Level 1 & 2- auto admit
- Level 3- BU admissible but required to contact ECS for guidance
- Accept and encourage toward ECS, or
- Discourage and guide toward another BU major

Graduate Recruitment Plan

1. Recruitment based on GRE search
   - Purchase names, 5-step contact plan
   - Drive to website
2. Recruit from special populations
3. Recruit our own seniors
4. Visit other universities
5. Scholars Day
6. Increase number of assistantships

Graduate Student Data

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BME</td>
<td>---</td>
<td>---</td>
<td>5/1</td>
<td>7/2</td>
<td>10/2</td>
</tr>
<tr>
<td>CS</td>
<td>84/30</td>
<td>67/29</td>
<td>43/28</td>
<td>34/25</td>
<td>31/19</td>
</tr>
<tr>
<td>ECE</td>
<td>---</td>
<td>---</td>
<td>15/8</td>
<td>26/6</td>
<td>24/10</td>
</tr>
<tr>
<td>EGR</td>
<td>---</td>
<td>---</td>
<td>0/0</td>
<td>4/0</td>
<td>2/2</td>
</tr>
<tr>
<td>ME</td>
<td>---</td>
<td>---</td>
<td>2/2</td>
<td>8/3</td>
<td>4/3</td>
</tr>
<tr>
<td>ECS total</td>
<td>84/30</td>
<td>67/29</td>
<td>65/39</td>
<td>79/35</td>
<td>71/36</td>
</tr>
</tbody>
</table>
BU Strategic Process

- Announced Spring '06, but few details
- Pondered and lined up over the summer
- Identified array of ECS prospects
- Primary focus of ECS Fall Faculty Retreat
- Selected five ECS projects to pursue

BU Strategic Projects

- Units examine “how they might like to see themselves prosper.”
- “Operational Plans” tied to incremental
- “Strategic Proposals” identify a few flagship initiatives around which we can all rally and draw inspiration
- Due 15-Dec-06; decision 30-June-07

BU Strategic Initiatives

- A major strategic initiative is typically:
  1. Tied directly to Baylor’s mission & vision
  2. Long-term in their implementation
  3. Possibly expensive, so that we may have to forgo other worthy projects
  4. Broad in impact, including major capital expenses
  5. Highly selective in approval

BU Strategic Proposals

- Major strategic proposal must follow these guidelines:
  1. Assume our mission and vision in addressing societal needs
  2. Present plans to meet those needs
  3. Develop specific, measurable goals
  4. Accurately reflect any new major capital projects and all operating costs
  5. Be transparently evaluated with broad input from faculty, staff, students and friends

ECS Strategic Initiative Ideas

A. Internal (largely ECS driven)
   1. Joint CS/ECS Ph.D. and Avionics Research
      ● Common interests & resource saver between CS & ECE
      ● Significant research activity and community initiative
   2. Gaming and Simulation Environments
      ● Popularity & utility; from academic; w/ Comm. Studies

B. External (strong external partnerships)
   3. Appropriate Technology/Social Entrepreneurship/Christian Missions
      ● Significant on-going activity; Baylor fit
   4. Biomedical Science and Technology
      ● Props bioinformatics, biomedical engineering...

C. Capital (philanthropy/development driven)
   5. ECS facilities expansion
      ● Part of upcoming comprehensive fund-raising campaign
ECS Strategic Initiatives
- Joint CS/ECS Ph.D. and Avionics Research
- Gaming & Simulation Environments
- Appropriate Technology
- Biomedical Science & Technology

Joint CS/ECS Ph.D. & Avionics Research
Dr. Russ Duren, ECE
Dr. Mike Thompson, ECE
Dr. Pete Maurer, CS

Motivation for:
- Ph.D. Programs
  - Required to compete
  - Faculty productivity
  - Enhanced credibility
  - Enrich undergraduate and masters experience
- Aviation Research
  - Leverage existing funded research
  - Expand collaborations
  - Implementation
  - Community initiative: Waco Aviation Alliance

Cost factors:
- Contributions
  - Existing external funding
  - Shared courses and research areas
  - Future funded research projects
- Expenses
  - Graduate student stipends
  - Grant cost sharing
  - Faculty salaries
  - Equipment and travel

Combined Optimization:
- Shared Resources
  - Course cross listings
  - Research and laboratory space
  - Laboratory and computing equipment
  - Combined capabilities
  - Interfaces between disciplines
- Overlapping Research
  - Avionics
  - Computational intelligence
  - Telecommunications & Networking
  - Real-time operating systems and algorithms
  - Reconfigurable/Parallel computing

Research areas:
- Existing Funding
  - US Navy
    - Memory optimization
    - Data compression
    - Real-time systems
  - Baylor
    - Satellite processor
    - Reconfigurable processing

Potential Collaborators
- Internal
- External
  - Local: L-3, Free Flight, TSTC, Waco Aviation Alliance
  - Regional: Lockheed Martin
  - National: Navy, Air Force, NASA
Gaming & Simulation Environments

Dr. Jeff Donahoo, CS
Dr. Mike Korpi, Comm Studies

Why Gaming?

- Surpassed Hollywood in overall revenue in 2004
  - Industry is no game ($7 billion in 2004)
- 75% of heads of households play video games
  - People with money play games
- The average age of a gamer is 30
  - It’s not just kids
- Gamer gender is almost evenly split
  - Not just male loners (large user base)
- Professional gamers are celebrities
  - Societal impact is real

Why Gaming?

- Adult gamers have been playing 12 years (avg.)
  - It’s been around
- 53% of gamers expect to be playing in 10 years
  - It’s probably staying around
- Sales doubled in the last 10 years
- From 2000-2004, sales increased 4.5% per year
- Mobile and online gaming new and high-growth
  - Growth
- Simulated training environments
  - Graduate opportunities
  - Research funding

Proposal

- Partnership with Communications
- BSCS Gaming Track
  - 3 course gaming sequence
  - Calculus-based physics
  - Industry internship
  - Communications courses
- Resources
  - New gaming faculty member

Center for Appropriate Technology, Social Entrepreneurship, and Christian Missions

Walter L. Bradley, ECS
Jeff McMullen, Entrepreneurship
Michael Stroope, Seminary

Purpose of Center

- Research bottom-up approaches to alleviate poverty in developing countries
  - Develop new appropriate technologies and evaluate existing appropriate technologies
  - Develop new insights into social entrepreneurship and its application in developing countries
  - Consider how to further the Kingdom building work of the church in developing countries through a more holistic ministry that includes economic development and improved quality of life
Purpose of Center (con’t)

- Deploy bottom up approaches using
  - Student projects for technology development and business plans
  - Missions trips to go and deploy the ideas in the marketplace by starting businesses based on appropriate technology
  - Partner with local churches and missions organizations for project launches and long-term sustainability

Purpose of Center (con’t)

- Become internationally recognized as the “go to” source for information and networking on bottom-up approaches to alleviation of poverty as an integral component in Kingdom building.
- Enlarge the vision at Baylor and in the Christian community at large for the importance of meeting the material needs of poor in developing countries as an integral part of Christian missions.

Appropriate Technology, Social Entrepreneurship, & Christian Missions

- Interdisciplinary: Engineering, Business, Seminary (also Biology, Sociology, Environmental Studies, Political Science)
- Focused on: international Christian service learning for undergraduate and graduate students
- R&D projects: research (e.g., coconut research) and deployment projects (e.g., Kenya)
- Curriculum: incorporate as real-world projects for real customers
- Partners: Christian churches in developing countries as part of holistic missions.
- Synergies: renewable energy research

“Institute for Biomedical Science and Technology”
Dr. Erich Baker, CS
Dr. Bob Kane, BMS

Current Framework

- BMST is based on current Institute for Biomedical Studies (BMS)
  - http://www.baylor.edu/biomedical_studies/splash.php
  - Graduate education program administered from Baylor campus in Waco
  - Comprised of adjunct faculty members from Baylor University Medical Center, Baylor Research Institute, Baylor Institute of Metabolic Disease.

- 27 students, ~half currently located on Baylor Campus
- Current curriculum
  - Biochemistry and Biological Sciences Tracks
  - Each track has 14 core hours dedicated to that core. For biochemistry, these 14 hours must come from:
    - 3 semester hours BMS 5100 Biomedical Seminar
    - 3 semester hours CHE 4341 General Biochemistry
    - 3 semester hours CHE 4342 Topics of Human Biochemistry
    - 2 semester hours CHE 4248 General Biochemistry Laboratory
    - 9 semester hours from any of the following
      - CHE 5346 Biotechnology
      - CHE 5347 Physical Biochemistry
      - CHE 5348 Enzymology
    - 3 semester hours BMS 5343 Studies in Intermediary Metabolism or BMS 5344 Clinical Chemistry
  - 12 elective hours and 40 hours of dissertation research are required
Possible Framework

- Expand the Number of Tracks to include those of interest to ECS
  - Genomics and Bioinformatics
  - Applied Computational Life Science
  - Biomedical Engineering
  - Systems Modeling
- Tracks of Interest to other Academic Units
  - Applied Forensic Science
  - Emerging Diseases

Each Track (or Module) will have a unique set of core requirements determined by module administrator and student research interests
- Modules can be added or removed to maintain flexibility

ECS Benefits

- Ph.D. granting mechanism in selected areas
- Increased number of stipends
- Increased number of faculty as BMST core faculty or joint appointments
- Institute sabbatical time for existing ECS faculty
- Infrastructure support
- Expanded granting opportunities

ECS Strategic Initiatives

- Joint CS/ECS Ph.D. and Avionics Research
- Gaming & Simulation Environments
- Appropriate Technology
- Biomedical Science & Technology