Innovation Through Collaboration

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A comprehensive study is underway to transform Undergraduate engineering education

Transforming Undergraduate Education in Engineering

Phase I: Synthesizing and Integrating Industry Perspectives

May 9-10, 2013 Workshop Report
Early agreement in the knowledge and skills needed in engineers was obtained.

“They seek a T-shaped engineering graduate who brings broad knowledge across domains and the ability to collaborate within a diverse workforce as well as deep expertise within a single domain.”
IMPORTANT SKILLS: TECH, MANAGE, BUSINESS, MANUFACTURING

- Use computer technology: Extremely important (800), Very important (400), Moderately important (300), Slightly important (50), Not at all important (200)
- Manage engineering projects: Extremely important (600), Very important (200), Moderately important (100), Slightly important (50), Not at all important (20)
- Business acumen: Extremely important (500), Very important (300), Moderately important (100), Slightly important (20), Not at all important (10)
- Basic manufacturing/machinery: Extremely important (200), Very important (100), Moderately important (50), Slightly important (20), Not at all important (10)
IMPORTANT SKILLS: COMMUNICATIONS

- Ability to function in multicultural environment
- Ability to function in cultural settings
- Ability to communicate effectively
- Ability to write effectively

Bar chart with categories such as Extremely important, Very important, Moderately important, Slightly important, Not at all important.
OTHER SKILLS
Mission:
Educate students on the process to generate, test, and launch new innovations in the market through collaboration with industry and entrepreneurs.

Industry and Entrepreneurs

Green-Global-Energy-LLC

Students

Faculty

Senior Projects

Speakers

Innovation Through Collaboration Minor

BRADLEY University
Project Title:
“Design and Fabrication of Legacy Parts using 3-D Printing”

Project Description:
Develop a cost-effective solution to meet the challenges of supporting production of legacy parts (low-volume non-current designs). The developed solution must understand and address typical problems experienced today with legacy parts. Determine the ROI and other benefits for 3-D printed legacy parts.
**Project Title:**
“Design of a Portable Measurement System for Monitoring Sleep”

**Project Description:**
Develop a portable, cost-effective measurement system to monitoring patient sleep for in-home studies. Determine the instrumentation required to adequately monitor patient physiology during sleep and combine it into a measurement system that can transmit data to a server. Evaluate the market potential and potential users for this system.
2016-2017 Convergence Projects

- Team #1 Siemens: Design of Burner Components for Use with Alternative Fuels
- Team #2 Caterpillar: Air Valve Strategy
- Team #3 Hydrogreen Innovations: Design Improvement and Performance Characterization of a Portable, On-demand Hydrogen Generator
Academic Program

• Senior Projects
• Junior level courses
• Bradley Core Curriculum courses (Gen Ed courses)
  • Innovation Through Collaboration Minor

• Awareness Seminars:
  Guest Speakers
  • April Speaker – Tazio S. Grivetti
    Innovation Viability Manager
    Caterpillar Inc.
Stereotypes

NERDS
You cannot kill what already has no life.

Engineering Students

Business Students

BRADLEY University
Junior Level Courses

• Started Fall 2014
• Evolution
  – Course numbers – BUS 361 and BUS 362
  – Content - Theory and practice of collaboration
  – Instructors – Ross Miller and Dr. John Engdahl
• Future
Innovation Through Collaboration Minor

• Bradley Definition of a Minor: 15-17 credits
  – Double counting allowed

• Description:
  – Students learn the processes to generate, test, and launch new technological innovations in the market through collaboration with industry and entrepreneurs.

• Content:
  – Senior projects (4-5 credits)
  – Junior level courses (6 credits)
  – Other elective courses (4-6 credits)
Innovation Through Collaboration Minor

• **Required Courses (6 hours):**
  – BUS 361 - Collaboration in Organizations
  – BUS 362 - Innovation in Organizations

• **Capstone Courses (4-5 Hours)**
  – BUS 400 SCP (2 hours) and BUS 401 SCP II (3 hours)
  – CON 493 Senior Project Planning (1 hour) and 498 Senior Project (3 hours)
  – C E 493 Civil Engineering Design Project (1 hour) and 498 Civil Engineering Design Project II (3 hours)
  – ECE 498 Senior Capstone Project (2 hours) and 499 Senior Capstone Project I (3 hours)
  – IME 499 Senior Industrial Project (4 hours)
  – ME 410 ME Senior Project I (2 hours) and M E 411 ME Senior Project II (2 hours)
Innovation Through Collaboration Minor

- Foundation Courses (4 – 6 hours):
  - ATG 157 - Accounting Principles – Financial
  - ATG 158 - Accounting Principles - Cost Management
  - ECO 100 - Introduction to Economics
  - ECO 221 - Principles of Microeconomics
  - ECO 222 - Principles of Macroeconomics
  - M L 250 – Interpersonal Effectiveness in Organizations
  - MTG 315 – Principles of Marketing
  - FIN 322 – Business Finance
  - M L 350 – Managing for Results in Organizations

OR
Building the Future

Business and Engineering complex
Corporate Memberships

- Allow them access to another set of skills
- Innovation outside the corporate walls
- Innovator in Residence
- Convergence Projects
- Short-term training
- New product development consortium
- More Student interaction
Benefits to Bradley

• Student Engagement
• Opportunities for Internships
• Opportunities for future employment
• Opportunities for Professor research
• More interaction with Corporate Innovators

• More Opportunity to develop the “T” student in both Engineering and Business
Curtis Staker has over 30 years of executive leadership experience in security and technology. Prior to CTI, Mr. Staker was the Chairman and CEO of GFI Software headquartered in Malta where he consolidated multiple companies around the world into one organization and increased sales by 50%. Before GFI, Curtis served as President of Websense (NASDAQ:WBSN) and increased sales from $16M to $200M, grew the Websense market cap to $1.4B, and increased the number of users from 7.5M to over 20M. Prior to Websense, Mr. Staker served SDRC as VP/GM of Asia Pacific where he grew revenue from $50M to $90M and VP/GM of Americas where revenue grew from $120M to $180M and margins from 26% to 48%. Mr. Staker has a Bachelor’s degree in Mechanical Engineering from Bradley University located in Peoria, IL and began his career at Caterpillar Tractor Company. Curt and his wife Jennifer live in San Diego, CA with their two Rottweilers Daisy Jane and Billie Jean. They have a daughter Fernanda (Mexico City) and sons Luc (Buffalo, MN) and Joshua (San Diego, CA) along with 3 grandchildren Sofia, Rodrigo and Hobie.
Proven, prolific inventor and innovator, with the rare quality to not only come up with groundbreaking ideas, but turn them into reality. Expert in corporate and entrepreneurial innovation, culture-building, driving creativity and collaboration. 20 years of experience in engineering, service and new product development, including electric power generation, electronic controls, autonomy, robotics, engine component and system design.
Questions
Thank you!