Proceedings

Teaching Entrepreneurship to Engineering Students

Engineering Conferences International Year 2003

Moving Students with Entrepreneurial Mindsets to Being Technology Entrepreneurs

Elizabeth C. Kisenwether
Pennsylvania State University

This paper is posted at ECI Digital Archives.
http://dc.engconfintl.org/teaching/18
Penn State’s Engineering Entrepreneurship Minor


http://e-ship.ecsel.psu.edu

Program Director: Elizabeth Kisenwether
exk13@psu.edu 814.863.1531

GE Learning Excellence Fund 2001-2003
Background

- Penn State awarded 2-year GE Learning Excellence Fund Grant, January 2001 start:
  - Problem-Based Learning in Entrepreneurship (PBLE) Program
  - First courses – Fall 2001

- Goals:
  - ✓ leverage GE Funds to launch *Engineering Entrepreneurship Minor in College of Engineering*
  - ✓ *Establish close ties to Smeal College of Business, School for Information Sciences and Technology (IST), and Entrepreneurship Program at Penn State Altoona.*
Mission: PBLE Program and E-SHIP Minor

- Deliver cross-disciplinary, collaborative, problem-based learning opportunities in entrepreneurship focused on undergraduate engineering, business and IST students.

- Support development of entrepreneurial “mindset”
Entrepreneurship

- **Definition:**
  - Ability and desire to create and build something of value from idea or concept.
  - Create new long-term value for a product or company with personal vision, passion, risk-taking, hard work and creativity.

- **Entrepreneurial skills are of value in**
  - start-up companies
  - inside existing companies (intrapreneurship),
  - creating new business alliances
Engineering E-Ship Minor

- E-Ship Minor approved April 2002
- Minor = Core courses (12 credits) + Elective courses (6 credits)
- Unique features:
  - Minor provides student “cross-training”
    - *Business students get engineering basics*
    - *Engineering & IST students get business basics*
  - *Business faculty teaching Bus. Basics course; solid tie to Smeal*
E-SHIP Minor
Core Courses (12 credits)

ENGR310
Entrepreneurial Leadership

QMM492 – Intro. to Eng. Design Principles
OR
ENGR411
E-ship Business Basics

ENGR407
Technology Based E-ship

ENTR430
E-ship & New Product Development

Business students

Eng. & IST students

Technology Entrepreneurs & Industry

Business & Engineering Faculty
E-Ship Minor Supporting Courses

- 6 additional credits to broaden technology skills and business knowledge
  - STS (Science, Technology and Society)
  - Business students take intro-level IST and engineering courses
  - Engineering students take business & IST courses
  - IST students take intro. engineering and business courses
  - ENGR497B (3 credit) for Stage II Teams: industry projects as well as continued student-developed product ideas
Fall 2002

- NCIIA Grant (three year) awarded: E-Ship Venture Fund and Competitions
  - Funds for E-Ship student team product prototyping
  - Awards
  - Expanded E-Ship Competition in Spring – All-PSU

- E-ship Events Series for students, faculty, local entrepreneurs; four events (Bob Beaury)

- E-Ship Competition – new two stage process
  - 5 minute elevator pitch competitions – all teams
  - Top teams attend Product Showcase Dec. 12 with product prototypes, brochures
Challenges

Finding faculty interested in entrepreneurship at University Park plus all Commonwealth campuses

- Starting Spring 2003: Penn State Entrepreneurship Programs Network E-SHIP

- Student Assessment
  - on-going analysis of student’s growth in creativity, self-efficacy, teamwork, communication skills while in E-SHIP Minor, plus after graduation
  - important to show the “value proposition” of the E-SHIP Minor, courses and activities for future funding, etc.