

Proceedings
Teaching Entrepreneurship to Engineering
Students

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Entrepreneurship and Engineering
Education: The Multidimensional
Approaches of Rose-Hulman Institute of
Technology

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**ENTREPRENEURSHIP AND
ENGINEERING EDUCATION: THE
MULTI-DIMENSIONAL APPROACH
OF ROSE-HULMAN INSTITUTE OF
TECHNOLOGY**

**Thomas W. Mason and Arthur Western
Rose-Hulman Institute of Technology**

EDUCATION AND BUSINESS DIFFERENCES

- **Pursuing Truth Is Not The Same as Pursuing Profits**
- **Academic Time Is Different From Business Time**
- **Business Allocates Resources For Value, Not “Fairness”**
- **Business Values Ambitious Failures Much Less**

ENGINEERS & ENTREPRENEURIAL TRAITS

- **Intelligence**
- **Courage**
- **Knowledge of Technology, Business & Culture**
- **Ability To Manage Risk**
- **Ability To Tolerate Uncertainty**
- **Interpersonal & Communication Skills**

DO ENGINEERS HAVE A CHOICE NOT TO BE ENTREPRENEURIAL IN THE 21ST CENTURY?

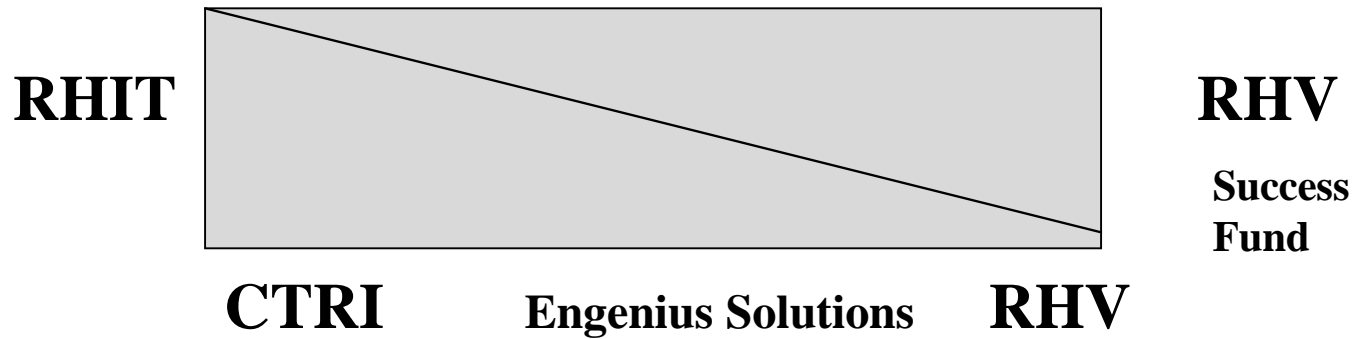
- **Rapid Technological and Business Changes**
- **Compressed Product Development Times**
- **Cross Functional Teams**
- **Technically Best Does Not Mean Commercially Successful**

ENTREPRENEURIAL EDUCATION ADDRESSES ABET CRITERIA

- **“(d) An ability to function on multi-disciplinary teams**
 - **(e) An ability to identify, formulate and solve engineering problems**
 - **(f) An understanding of professional and ethical responsibility**
 - **(g) An ability to communicate effectively**
 - **(h) The broad education necessary to understand the impact of engineering solutions in a global and societal context**
 - **(i) A recognition of the need for, and an ability to engage in life-long learning**
 - **(j) A knowledge of contemporary issues**
 - **(k) An ability to use techniques, skills and modern engineering tools necessary for engineering practice”**
- **(2002-03 Criteria for Accrediting Engineering Programs, p 1)**

**HOW DOES ROSE-HULMAN
COMBINE ENTREPRENEURSHIP
AND ENGINEERING EDUCATION?**

SPECTRUM OF OPPORTUNITIES



RHIT-T HE PRIMARILY EDUCATION END OF THE SPECTRUM

- **Economics Course Called The Entrepreneur**
- **Independent Study For Real Business Plans**
- **Electrical And Computer Engineering Sequence**
 - **Requires Some Commercialization Assessment**
 - **Uses Guest Lecturers And An Engineering Management Graduate Student**
 - **Has Generated E-teams & Potential Innovations**
 - **Has Generated Improved Student Responses**

THINK ENTREPRENEURIALY

Engenius
Solutions

ROSE-HULMAN VENTURES

THE GREATER BUSINESS FOCUS END

- **Educational Purpose Is Still The Major Motivation**
- **More Emphasis On Timely Completion To Meet Customer Requirements**
- **Opportunity For Real Life Contributions And Proximity To The Pain Of Real Potential Failures**

**OVERVIEW:
WHAT DID ROSE-HULMAN RECEIVE?**

- **\$54.6 Million**
- **Two Three-year Grants From Lily Endowment**

OUTCOMES EXPECTED BY LILY ENDOWMENT

- **Unique Educational Experimentation**
- **Impact Indiana's Economic Realities**
 - **Indiana Ranks 48th of the 50 States in % of Population Holding at Least a BS**
 - **Indiana Ranks 50th in % of Population Employed as “Professionals”**
 - **Only 37% of Engineering, Science and Technology Graduates from Indiana Colleges Work Here**
- **Change It !!!!**

ROSE-HULMAN VENTURES: THE MISSION

- **Foster Creation And Growth Of Innovation-based Businesses By Providing Access To:**
 - **Infrastructure**
 - **Technical Support**
 - **Business Support**
 - **Capital**
- **Thereby Providing:**
 - **Faculty/Student Educational Experience**
 - **Economic Growth For Terre Haute And Indiana**

SPECIAL FEATURES

- **Technology-based Incubator**
- **New-Product Development Laboratories**
- **Information Technology Infrastructure**
- **The Entrepreneurship and Business Planning Group**
- **Rose-Hulman Venture Dollars (RHV\$)**

SPECIAL FEATURES

- Internships For Students To Work With Technological Entrepreneurs
- M.S. In Engineering Management Assistantships For Entrepreneurial Engineers
- Innovation Fellows - A Learning And Contributing Experience For Technical Experts
- Alliances With Other Schools: Business, etc.

RESULTS

- **200 Students and Faculty Have Gotten Unique Hands-on Experience**
- **32 Indiana Based Technology Ventures Helped**
- **First “Graduate” Was Student Company**
- **More Graduates Interested In Staying In Indiana**