

*Proceedings*  
*Teaching Entrepreneurship to Engineering*  
*Students*

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

Thomas W. Mason\*

Arthur Western†

\*Rose-Hulman Institute of Technology

†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?**

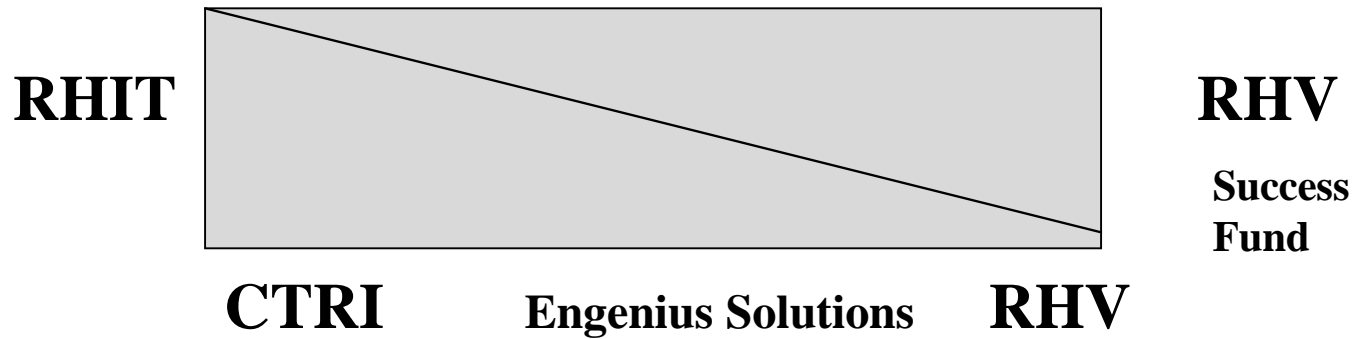
- **Rapid Technological and Business Changes**
- **Compressed Product Development Times**
- **Cross Functional Teams**
- **Technically Best Does Not Mean Commercially Successful**

# **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 ENTREPRENEURIALLY**

**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**