

Proceedings
Teaching Entrepreneurship to Engineering
Students

Engineering Conferences International

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The Engineering Entrepreneurial
Program at Lawrence Technological
University

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Experience the Business of Engineering

**The Engineering
Entrepreneurial Program at
Lawrence Technological
University**

**Lawrence Technological University
Southfield, Michigan**

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What is Entrepreneurship?

- “Entrepreneurship is a management and leadership style that involves pursuing opportunities without regard to resources currently controlled”
- “Any attempt at new business or new venture creation, such as self-employment, a new organization, or the expansion of an existing business, by an individual, a team, or an established business”
- “A way of thinking and acting that is opportunity obsessed, holistic in approach and leadership balanced for the purpose of value creation”



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Industry Requirements

Engineers have many roles in industry, many of which require entrepreneurial skills. Examples are:

- Design and development of technology-based products
- Technical leadership of engineering departments
- Marketing and product management of technology-based products
- Leading technology-based companies
- Founding high technology businesses



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Industry Requirements

- Strong skills in communication and persuasion
- Ability to lead and work effectively as a member of a team
- A sound understanding of non-technical forces that affect engineering decisions
- An awareness of global markets and competition
- Demonstrated management skills and a strong business sense



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Industry Requirements

■ Lear Corporation

- Talented people with technical, business and international experience
- Productive participation in business meetings
- Leading the design/engineering activity both in house and (at customer's)

■ Boeing Corporation

- Understanding the context in which engineering is practiced, including economics, business practice, history, and social needs
- Ability to think critically and creatively as well as independently and cooperatively
- The ability and self-confidence to adapt to rapid and major change

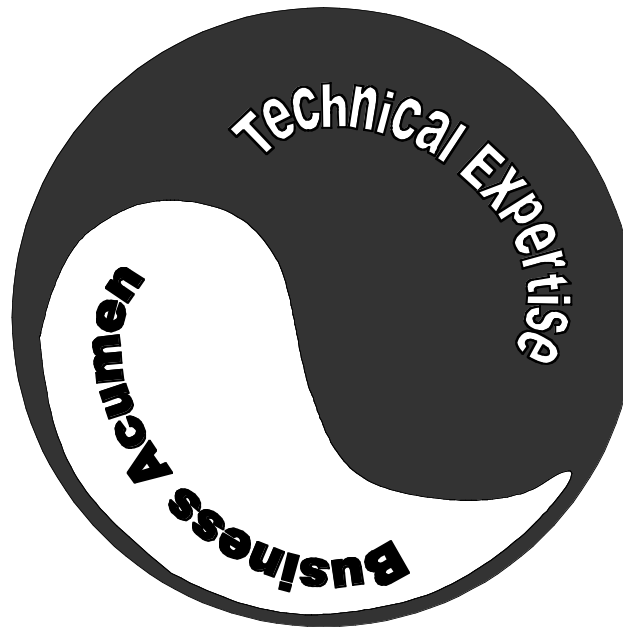
■ Ford Motor Company

- Understands the essential requirements of our business—business acumen.

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Industry Requirements

The complete engineer





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Meeting the Challenge

- Responsive Curriculum
- Practitioner Instructors
- Industry Sponsorship



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Meeting the Challenge

■ Responsive Curriculum

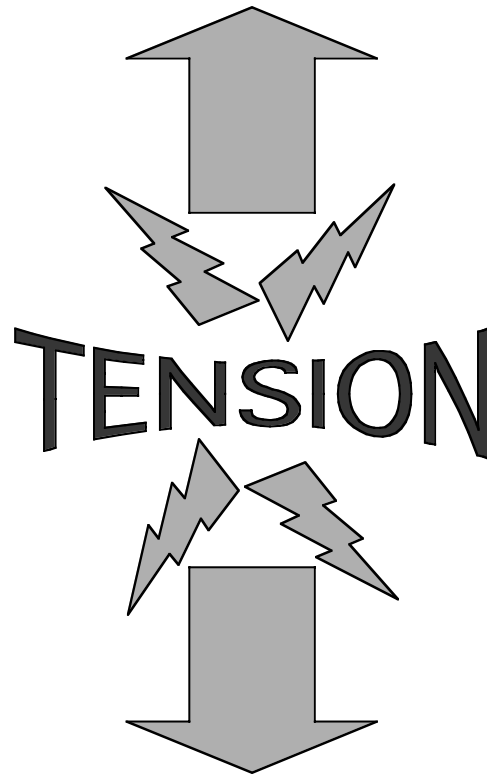
- Practitioner Instructors

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Responsive Curriculum

Traditional Engineering Curriculum



Entrepreneurial Curriculum



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Responsive Curriculum

Traditional Curriculum

- Not responsive to the “new economy”
- Rigid definitions of subjects and projects
- Produced students as efficient machines
- Graduates entered industry as replaceable parts of the machine



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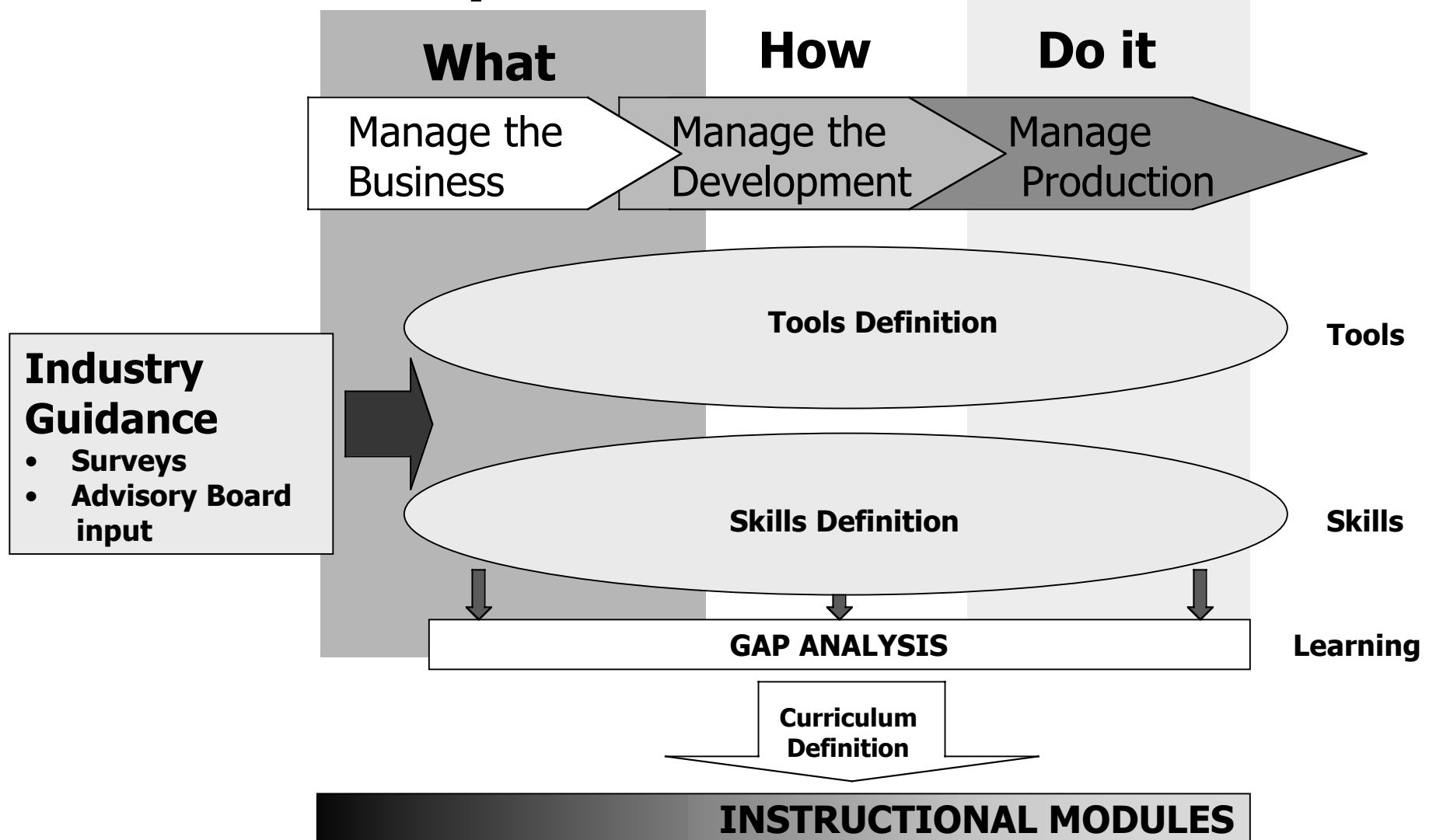
Responsive Curriculum

Entrepreneurial Curriculum

- Recognizes the changes in the “New Economy” & adapts
- Includes flexible definitions of subjects and projects
- Recognizes the individual working within a team
- Addresses the whole picture for Engineers

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Responsive Curriculum





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Meeting the Challenge

- Responsive Curriculum
- **Practitioner Instructors**
- Industry Sponsorship



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Practitioner Instructors

Can We Teach Entrepreneurial Skills In A Traditional Classroom?

- The skills and expertise that ABET 2000 and the industry require cannot be easily taught solely within a traditional classroom setup.
- Most, if not all, of these skills are best refined in practice.



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Practitioner Instructors

Non-Traditional Faculty

- Finance-----CEO, Management Consultant Firm
- Marketing-----Former Marketing Director
- Business Law-----Practicing Attorneys
Intellectual Property
- Strategic Management---CEO ,Venture Capital Firm
- Project Management-----Former PM Manager, Big Three
automotive



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Meeting the Challenge

- Responsive Curriculum
- Practitioner Instructors
- **Industry Sponsorship**



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Industry Sponsorship

- Location
- Advisory Board
- Collaborative Programs



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Industry Sponsorship

Location

- Oakland County, where Lawrence Tech is centrally located, has been labeled an “economic powerhouse” – the site of more entrepreneurial activity than any other county in Michigan
- Between 1996 and 1998, there were a total of 38,578 new incorporations in Oakland County alone, approximately 42 percent of the new incorporations statewide
- More than one-third of Michigan’s R&D firms are located in Oakland County
- Located near world headquarters of multinational companies



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Industry Sponsorship

Advisory Board

- Semi-annual meetings
- Planned project presentation day
- Survey responses
- Continuous Feedback



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Industry Sponsorship

Collaborative Programs

- University programs
 - Co-op program
 - Global Engineering Program
- Project sponsorship
- Funding



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Uniqueness of Entrepreneurial Program

- One of the unique features of this approach to education is:
 - Students become the engineers and the managers. All in all, they no longer feel like students - they feel like engineers and they own their education!



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Summary

Our mission is to equip engineering students with entrepreneurial skills. We achieve this by helping students discover knowledge through creation of an active learning atmosphere where faculty serve as mentors and coaches. Our program emphasizes and integrates engineering with creativity, innovation, and business skills within the curriculum and student enterprises.