EECS 406: High-Tech Entrepreneurship

Instructor: Professor Mohammed N. Islam (647-9700, mni@umich.edu, 2417B EECS)

Lectures: MW 3-4:30pm (3 Hours per week)
Recitations: MW 4:30-5pm (1 Hour per week)

[4 Credit Course]

Prerequisites: Senior or Graduate Standing (Juniors or Sophomores will also be permitted, depending on available slots in the class)

Grading:

- Class Participation and Attendance: 10%
- Homework: 25%
- Book Review: 10%
- Case Studies: 15%
- Project Presentation:
  - Elevator Pitch: 10%
  - Investor Pitch: 20%
  - Executive Summary: 10%

Textbooks:
Technology Ventures: From Ideas to Enterprise, 2\textsuperscript{nd} Ed., 2007

Supplemental Reading Material (on loan in library):
- New Venture Creation: Entrepreneurship for the 21\textsuperscript{st} Century (7\textsuperscript{th} Ed., 2007)
- Entrepreneurial Small Business (2007)
- The Entrepreneurial Venture (2\textsuperscript{nd} Ed., 1999)

Summary of Course:

The technology sector represents a significant portion of the economy of every industrialized nation. In the U.S., more than one third of the gross national product and about half of private-sector spending on capital goods are related to technology. Therefore, particularly in the U.S. economic growth depends on the health and contributions of technology businesses.

This course is about “Technology Entrepreneurship,” which is a style of business leadership that involves identifying high-potential, technology-intensive commercial opportunities, gathering resources such as talent and capital, and managing rapid growth and significant risks using principled decision-making skills. Technology ventures exploit break-through advancements in science and engineering to develop better products and services for customers. The leaders of technology ventures demonstrate focus, passion, and an unrelenting will to succeed.

The course consists of three major parts. First, lectures on technology ventures twice a week will be supported by textbook reading and homework assignments. In addition, four of five guest lecturers will augment the lectures to give “real world” advice on certain aspects of small businesses. Second, recitations will be lead by student teams that review selected books on entrepreneurial traits, leadership style, and the life cycle and challenges of start-up businesses. Also, the student teams will lead discussions on seven case studies illustrating some of the concepts covered in the lectures. Finally, the
last few classes will have team presentations of business plans, where local entrepreneurs, angels, and VC’s may be invited to critique.

The lectures will cover four major topic areas.

I. Opportunity and Strategy
   This section focuses on core issues involved in deciding to pursue an entrepreneurial vision and the characteristics of the venture and entrepreneurs that are vital to success from the very beginning. The outcomes from this section are opportunity, concept, business model and strategy.

II. Creating New Ventures
   This section examines the major strategic decisions that any group of entrepreneurs must deal with: how to balance risk and return, what entrepreneurial structure to pursue, how to find and cultivate the best employees and help make them productive, and the critical issues of intellectual property. The outcome from this section is an outline of a plan for a new technology venture.

III. Functional Development
   This section discusses the operational and organizational challenges that entrepreneurs must tackle. Although good technology with a sustainable advantage is important, many of the operational and organizational issues will actually determine the success of the enterprise. The outcome from this section is a detailed functional plan for the new enterprise.

IV. Growth and Financing
   This section is about putting together a solid financial plan for the company, including exit and funding strategies. The outcome of this section is financing and building an important enterprise.

Guest Lecturers will be sprinkled in with lectures during the term (primarily between the 4th and 10th weeks) to complement or reinforce some of the concepts being covered in the lectures and homework. Potential Guest Lecturers for this term include:
   1) Local Entrepreneurs
   2) Local VCs
   3) Local Service Providers (bankers, CPA’s, lawyers, etc)

The course is designed for upper-class undergraduates and graduate students in engineering who seek to learn the essentials of technology entrepreneurship. No prerequisite knowledge is assumed. Beyond just the textbook learning that engineering students are familiar with, there will be a strong team orientation in the course. Student teams will review books and case studies and develop a business plan, elevator pitch, and executive summary. Several oral presentations will be provided by each team throughout the semester.

For students interested in someday starting their own businesses or working in start-ups, this course should give valuable insights and a flavor of what is to come. Also, there is a companion course on “Patent Fundamentals for Engineers,” which covers how to create the barrier to entry, so that start-up enterprises can be funded.

Bottom line teaching of the course is that to have a company you must answer the questions: (a) Who is your customer? (b) What is the pain, and how much will the customer pay for you for relieving the pain? What is your sustainable competitive advantage?
Tentative Schedule

Section 1: Opportunity and Strategy
Outcomes: Opportunity, concept, business model and strategy

Week #1: Introduction, Organization, Team ing
Capitalism and the Technology Entrepreneur [ch 1]

Week #2: Opportunity and the Business Summary [ch 2]
Building a Competitive Advantage [ch 3]

Week #3: Creating a Strategy [ch 4]
Innovation Strategies [ch 5]

Section 2: Creating New Ventures
Outcome: Outline of a plan for a new technology venture

Week #4: Risk and Return [ch 6]
Venture Creation and the Business Plan [ch 7]
Independent Versus Corporate Ventures [ch 8**]

Week #5: Elements of the Business Plan [notes]
Formulating the Pitch and Business Plan [notes]

Week #6: Knowledge, Learning and Design [ch 9**]
Legal Formation and Intellectual Property [ch 10**]

Section 3: Functional Development
Outcome: Detailed functional plan for the new enterprise

Week #7: The Marketing and Sales Plan [ch 11]
The New Enterprise Organization [ch 12]

Week #8: Emotional Intelligence in Business [HBR notes]
Working with Emotional Intelligence [notes]

Week #9: Acquiring, Organizing and Managing Resources [ch 13**]
The Management of Operations [ch 14**]
Acquisitions, Mergers and Global Business [ch 15**]
Wikinomics [notes]

Section 4: Growth and Financing
Outcome: Financing and building an important enterprise

Week #10: Business Writing and Communications [notes]

Week #11: The Profit and Harvest Plan [ch 16]
The Financial Plan [ch 17]

Week #12: Sources of Capital [ch 18**]
VC Funding vs. SBIR/STTR [notes]
Presenting the Plan and Negotiating the Deal [ch 19]
Active Listening and Reading Body Language [notes]

Week #13: Leading a New Technology Venture to Success [ch 20]
Ethics in Business: Avoiding the “Crooked-E” in Enron [notes]

Weeks #14: Lessons Learned the Hard Way (things I wish others had told me) [notes]

End of Semester (last two weeks, out of class): Group project presentations
Books or Articles for Review: (each group must provide a ~30 minutes, 15+ power point slide presentation reviewing the concepts and teachings in one of the following. If you pick the short books marked by *, then you must review two of the * books):

1. The Monk and the Riddle
2. Crossing the Chasm
3. The Gorilla Game
4. Inside the Tornado
5. Living on the Fault Line
6. The Innovator’s Dilemma
7. Emotional Intelligence
8. On Becoming a Leader
9. How to Win Friends and Influence People
10. The 7 Habits of Highly Effective People
11. First Things First
12. The One Minute Manager (*)
13. Gung Ho (*)
14. Whale Done (*)
15. High Five (*)

Case Studies for Review:
1. World Indigo
2. Biodiesel Incorporated
3. Yahoo!
4. Barbara Arneson
5. Jon Hirschtick’s New Venture
6. Artemis Images
7. RADCO Electronics