Managing Technological Innovation

Introduction

This course provides an introduction to and overview of technological innovation in small, fast-growing enterprises. We will explore both the theories of innovation as well as the strategic and tactical approaches and processes that these theories entail. We will discuss, both amongst ourselves and with speakers from startups, venture capital firms, and established companies, the practical realities of implementing these approaches and processes in today’s entrepreneurial environment.

Course Requirements

The final grade for the course will be a weighted average of your grades on two group project papers, an individual paper, and in-class participation. The group papers will each account for 25%, the individual paper for 30%, and in-class participation for 20% of the grade.

Group Project
You will form a group of three or four people from the class. The group will choose an idea for a startup business and will use the strategies and processes we learn to explicate this business opportunity. There will be two group papers submitted, one on 10/24, and one on 12/12.

Individual Paper
You will critique the business plan of a startup company (list of companies to be provided towards the end of the semester) using the ideas, tools, and techniques taught in this class. This paper will be an individual effort and will be due 12/2.
In-class participation
You are expected to read regularly the assigned material before a lecture and participate in the general discussion during the lecture. Participation in case-study discussions and in-class group assignments is critical to the learning process.

Readings
The textbooks for the class will be:


There will be several handouts and case-studies distributed through courseworks. In addition there will be readings assigned for each class, along with URLs to access them.

Schedule of Meetings

9/2 Part 0: Introduction to MTI
A. What is technology? What is innovation?
B. What is entrepreneurship?
C. What is a startup?
D. Why should we care? Innovation and economic growth
E. Class overview
   1. Goals
   2. Structure
   3. Assignments
   4. Grading

Part I: Innovation

9/9
A. Is innovation driven from the micro- or macro-level of the economy?
B. Theories of Innovation
   1. Schumpeter and creative destruction
   2. Mokyr and the co-evolution of science and technology
   3. Perez and technological systems
C. What kinds of macro-level innovation is taking place today?

9/16

C. Innovation at the firm level
   1. Von Hippel and sources of innovation
   2. Arthur and architectural (?) innovation
   3. The S-curve
   4. Christensen and disruptive innovation

D. Was Google disruptive?

Part II: Opportunity Generation and Recognition

9/23

A. Startup framework
   1. What is a startup
   2. When does a startup become just a company, and what changes?

B. Psychology of Startups

9/30

C. Opportunity generation/ideation

D. Opportunity Assessment
   1. Porter's Five Forces model
   2. Industry analysis
   3. Competitive analysis
   4. Market sizing
   5. Product comparison/market positioning

10/7

6. Financial feasibility
   a. Fixed v. variable costs
   b. Unit economics and break-even
   c. Cost of customer acquisition
   d. Lifetime Value
   e. Building a financial model

10/14

7. Business model
   a. “How you make money”
   b. Business model canvas

Part III: De-Risking
A. De-risking theory

B. Lean
C. Customer Development

Part IV: Managing Growth

A. Product management
   1. Tech adoption lifecycle
   2. User stories
   3. Prototyping

B. Employees
C. Partnerships

C. Gathering resources: customers

D. Gathering resources: money