Entrepreneurship for Computer Science

**Introduction and Course Overview** 

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# Today...

- Introduction:
  - Definitions of startup, entrepreneurship, and entrepreneur
  - Types of entrepreneurship
  - Why startups usually fail?

#### • Course overview:

• Objectives, topics, and learning outcomes

### Outline

# Introduction

# Course Overview

# Why are you Interested in Entrepreneurship?

- You may have an idea that can change the world or improve an existing process you are familiar with
- You may have a technological breakthrough and want to capitalize on it (perhaps, by founding a *startup*)
- You may have a passion and want to learn about entrepreneurship while looking for a good idea, technology, and/or a partner

### Why are you Interested in Entrepreneurship?



In any of these cases, at this stage you may want simply to uncover the world of startups and entrepreneurship. If so, let us get started!

### What is a Startup?

- A startup is an organization designed to innovate a new product or service under conditions of extreme uncertainty (*"The Lean Startup"* by Eric Ries)
  - An organization encompasses mission, vision, strategy, hiring, accounting, finance, operations, etc.,
  - In this context, however, it operates under too much uncertainty, following *leap-of-faith assumptions* concerning its invention
  - Innovation = Invention × commercialization
    - This implies that having a product does not mean you have a business

## The Single Condition for a Business

- The single necessary and sufficient condition for a business is *a* paying customer
- The day someone pays you money for your product or service, you have a business, and NOT the day before
- But, having a paying customer does not mean you have a *sustainable* business!
- To have a sustainable business, you need enough customers paying enough money within a reasonable amount of time

### Entrepreneurship

- Entrepreneurship is *the process* of creating a sustainable business
- There are two types of entrepreneurship
  - Small and Medium Enterprise (SME)
  - Innovation-Driven Enterprise (IDE)

	SME	IDE
Market	Local and/or Regional	Regional/Global
Invention	Not Necessary	Necessary
Jobs	Non-tradable	Tradable
External Capital	Typically No	Yes
Growth	Linear	Exponential

### SME and IDE Expected Revenue & Job Trends





### Entrepreneurship vs. Management

- IDE entrepreneurship is a special kind of management
  - Entrepreneurship is cool, innovative, and exciting
  - Management is dull, serious, and bland
  - What is actually exciting is to see a startup succeed and change the world
    - This cannot happen without *managing* it rightly
    - The road to excitement passes through the (boring) management stuff!
- Why IDE entrepreneurship is a special kind of management?

### Entrepreneurship vs. Management

#### • Why special?

- Traditional business thinking suggests:
  - Perfecting a product, even if takes a great deal of time; hence, *long cycle times*
  - Large teams and hierarchical organizations
  - Failures are unacceptable
- Modern business (or entrepreneurial) thinking suggests:
  - Building a minimum viable product (MVP); hence, *short cycle times*
  - Focusing on what customers want, thus experimenting tremendously
  - Failing as a prerequisite for success
  - Small teams and flat organizations

# Schools of Thought in Entrepreneurship

- Three major schools of thought:
  - 1. "Just Do It"
    - Most entrepreneurs are wary of implementing traditional management practices, afraid that this will invite bureaucracy or stifle creativity
    - They assume management is the problem, hence, chaos is the answer
    - Unfortunately, this approach leads to chaos more often than it does to success
  - 2. "Launch a Rocket Ship"
    - Specify every single step to take in excruciating details (typically by tapping into a proven set of techniques used for managing big companies)
    - Specify the expected result of every single step taken— what happens if a tiny error occurs? Can you adapt or pivot?

# Schools of Thought in Entrepreneurship

- Three major schools of thought:
  - 3. "Drive a Car"
    - Set a (hypothetical) path to reach a destination (you are not sure whether this path will lead to the destination)
    - Experiment with and validate your path
    - Persevere, adapt, or even pivot if needed
      - If you are driving to work, do you give up if there is a detour in the road or you made a wrong turn?
        - No, you remain thoroughly focused on getting to your destination

#### The third school of though is the recommended one!

### Who is an Entrepreneur?

- Anyone who creates a startup is an entrepreneur
  - This implies that an entrepreneur should have a (strong) appetite of risk taking
- But an entrepreneur needs not create a startup; she/he can operate inside "established" organizations
  - This entrepreneur is typically referred to as "intrapreneur"
- In addition, an entrepreneur does not need to invent!
  - E.g., Steve Jobs identified the computer mouse created by Xerox PARC and commercialized it effectively through Apple
  - E.g., Larry Page and Sergey Brin used AdWords (which was created by Overture Services, Inc) on their search results pages

### The Startup Realty

- The grim reality is that most startups fail
- There are five essential elements that lead to successful startups



### What Makes Startups Succeed?



[Based on a study by IdeaLab]

### What Makes Startups Succeed?







Idea	Team	BM	Funding	Timing
	KKVA	How Will You Make Money?	ар а. <u>а</u> а.а. а.а. а.а. а.а.	
8	5	4	6	6

Idea	Team	BM	Funding	Timing
	KKVA	How Will You Make Money?	аран 2015 ан 2016 ан 2016 ан	
4	5	6	10	4

	Idea	Team	BM	Funding	Timing
Ű		KK	How Will You Make Money?		
	4	5	6	10	4



[Based on a study by IdeaLab]

### What Makes Startups Succeed?



Factors of success across more than 200 companies

[Based on a study by IdeaLab]

### Outline

### Introduction

Course Overview and Administrivia

## Course Objectives

- Starting a new venture is a serious undertaking with a great deal of risk and sacrifice
- The objective of this course is to increase your odds of succeeding in starting, executing, and growing a company
- The course will provide you with a scientific and practical end-to-end framework, which will help you either succeed quickly or fail faster (if failure was inevitable for the path that you were on)

# List of Topics

- **Considered:** a reasonably critical and comprehensive understanding
- **Thoughtful:** fluent, flexible and efficient understanding
- Masterful: a powerful and illuminating understanding



## Learning Outcomes

- After finishing this course, you should be able to:
  - 1. Form a complementary team and create an innovative culture
  - 2. Conduct in-depth primary and secondary market research, select a beachhead market, and calculate its Total Addressable Market (TAM) size
  - 3. Identify leap-of-faith assumptions, namely the value and growth hypotheses of a startup
  - 4. Appreciate the **build-measure-learn feedback** loop as a scientific method to spiral towards testing and verifying leap-of-faith assumptions
  - 5. Design and develop a Minimum Viable Product (MVP) to enter the build phase of the build-measure-learn feedback loop as quickly as possible

### Learning Outcomes

- After finishing this course, you should be able to:
  - 6. Test MVP with early adopters, collect feedback, and apply actionable analytics to steer MVP towards a Viable Product (VP)
  - 7. Apply split-test (or A/B) experiments to evaluate different variations of a MVP or VP feature
  - 8. Identify different engines of growth (e.g., viral and paid engines of growth) to determine product-market fit and achieve a sustainable business
  - 9. Differentiate between various types of pivots (e.g., zoom in, zoom out, customer segment, and engine of growth pivots)
  - 10. Design a business model, set a pricing framework, calculate the Lifetime Value (LTV) of an acquired customer, and compute the Cost of Customer Acquisition (COCA)

### Learning Outcomes

- After finishing this course, you should be able to:
  - **11. Value pre-revenue** and post-revenue companies
  - 12. Differentiate between different corporate metrics (e.g., price-to-earnings ratio and return-on-assets), stock types, bonds, equity, and debt
  - 13. Understand the venture capital financing process and raise money for a startup the right way
  - 14. Apply accrual accounting and interpret the three core financial statements, namely, the balance sheet, income statement, and cash flow statement
  - **15.** Recognize different exit policies (e.g., Initial Public Offering)

## Target Audience, Prerequisites, and Textbooks

- Target audience: all BS -CS students
- Prerequisites: Nothing, except being student
- No specific textbook, but here are some references:
  - "Disciplined Entrepreneurship" by Bill Aulet
  - "The Lean Startup" by Eric Ries
  - "Venture Deals" by Brad Feld and Jason Mendelson
  - "How Google Works" by Eric Schmidt and Jonathan Rosenberg
  - "Work Rules!: Insights from Inside Google That Will Transform How You Live and Lead" by Laszlo Bock