ENT-1014: Spring 2024
Quantitative Methods for Entrepreneurs

Class:
Google Classroom Link: TBA

Instructor: Rahul Mehta, CIO Beas Capital
Email: TBC

Course Overview

The course will focus on the importance of mathematics in understanding business solutions. Students will learn how to use mathematical concepts and tools to solve business problems, make better decisions, and launch and grow successful businesses. They will be exposed to a variety of industries and be taught the differences of various metrics. Students will also learn about the entrepreneurial process, from idea generation to market research to business planning.

A variety of guest lecturers will complement the main lecture. Guests will be experts in their fields. Students will have the opportunity to dine with the guest lecturers in a small group setting.

PROPOSED GRADING

1. **Attendance & Class Participation**: 20 %
2. **Class Evaluations (submitted at the beginning of every class)**: 20%
3. **Group Project (collaborative long-term assessment)**
   i **Initial Industry Report: 10%**
   ii **Final Report**: **25%**
   iii **Individual Viva**: **10%**
   iv **Peer Assessment**: **5%**

Each lecture will teach students to use mathematical tools to understand an industry. They will then be given an interaction with an industry veteran to understand the CEO's perspective. Students will be required (in groups of 4) to study an industry using a quantitative lens and will be required to submit the industry description by week three of the course.

The final project will consist of students in groups of four. Students will be expected to analyze an industry using mathematical tools as used in various industry studies.

LEARNING OUTCOMES

Upon completion of this course, students will be able to:

- Use mathematical concepts and tools to solve business problems.
- Launch and grow successful businesses.
- Understand the entrepreneurial process.
- Communicate effectively about mathematics and entrepreneurship.
- Navigate the financial landscape of entrepreneurship.
- Develop a business plan.
- Secure funding for their business.
- Exit their business successfully.

COURSE OUTLINE

****SYLLABUS IS SUBJECT TO CHANGE BY INSTRUCTOR, W/T ADVANCED NOTICE****

SESSION 01: INSURANCE

Case Study: ICICI Lombard/Niva Bupa
Guest Speaker: Bhargav Dasgupta, CEO ICICI Lombard

- Analyze an insurance company's financials.
- Calculate the effect of changes in interest rates and inflation on income statements.
- Calculate the effect of changes in actuarial tables.
- Understand the components of combined ratios.
- Design a CEO's dashboard for insurance.

SESSION 02: FUND MANAGEMENT

Case Study: Theremin.ai
Guest Speaker: Hemant Kothavade, CEO - Theremin.ai

- Run regression analysis on price-volume tables of stock market data.
- Understand how to run big data analysis.
- Calculate and contrast various risk ratios in portfolio (Sortini)
- Design efficient portfolio using AI tools.
- Design a CEO's dashboard for fund management.

SESSION 03: PHARMACEUTICALS

Case Study: Alembic
Guest Speaker: Pranav Amin, MD Alembic

- Patent law in US, exclusivity period and price degradation post patent expiration.
- Understand and build a predictive engine for price volume prediction post patent expiry.
- Break revenue stream into various segments to predict the revenue over time.
- Design a CEO's dashboard for pharmaceuticals.

SESSION 04: STOCK EXCHANGES

Case Study: National Stock Exchange (NSE)
Guest Speaker: Ashish Chauhan, CEO NSE

- Understand the various income streams of a stock exchange.
- Develop a model to predict volumes of stocks in response to market direction and sensitivity of revenues.
- Understanding of fixed vs. variable cost in a stock exchange.
- Effect of change in trade pricing to volumes.
- Design a CEO's dashboard for stock exchanges.

SESSION 05: DIRECT-TO-CONSUMER RETAIL

Case Study: mCaffeine
Guest Speakes: Vikas L, CEO mCaffeine

- Understand customer acquisition cost ("CAC") and be able to compute across modern, general and e-commerce.
- Develop a model to understand repeat buying and strategies to increase repeat buying.
- Measurement of effectiveness of marketing campaigns from a numeric standpoint.
- Understanding of effect on pricing at different levels of customer acquisition journey.
- Design a CEO's dashboard for direct-to-consumer companies.

SESSION 06: SAAS/LOYALTY REWARDS

Case Study: Zaggle
Guest Speakes: Raj N. Phani, Founder & Chairman - Zaggle

- Understand the economics of the issue of a pre-paid card, profitability for the merchant and the customer.
- Develop a sense of the gross margin in a SAAS (Software as a service business) and compute across various customers.
- Development of a screen for industries that do need SAAS/loyalty rewards program.
- Design a CEO's dashboard for SAAS/fintech companies.

ADDITIONAL TOPICS (if time permits)

- SME Lending with Aseem Dhru, SBFC Finance.
- Game Theory & General Management with Vimal Bhandari and Alok Vajpeyi.
- Retail with Subhodip Dutta Choudhry, CEO Hawkins
- Hospitals with Abhay Soi, Max.
- Retail Sports with Subhinder Singh, CEO Reebok, Adidas

FACULTY PROFILE

Rahul Mehta is the Chief Investment Officer and Partner at Beas Capital, leveraging extensive experience in investment and finance. His career journey includes significant roles such as an Advisor at Argonaut Private Equity and Paragon Partners (India), Director at Argonaut Private Equity, Principal at Blue River Capital, Associate at Greenhill & Co. and ChrysCapital, and Analyst at Merrill Lynch. He did his MBA from MIT Sloan School of Management and a Bachelor of Science in Mathematics and Economics from Cornell University.