Department of Technology Management & Innovation
MG-GY 9503 Capstone Project Course
Fall 2018

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Office/Hours:	By Appointment Dibner Building, 4th floor
Class Schedule:	Tuesdays 3:20-5:50 pm (Room #RGSH 203)

Course Pre-requisites

Graduate standing.

Course Description (catalog)

This course provides an integrative and state-of- the-art intellectual experience for participants at the conclusion of the program. The course is divided into two half semesters. The first half semester enables participants to focus on discerning the overarching trends which are driving innovation in various industry sectors. The class is divided into small groups each of which develops a comprehensive view of a particular industry sector. In the second half of the course, participants focus on the culminating project of the MOT Program. Participants can choose to do their final projects on firms, issues related to technology management or as an outgrowth of the emphasis on entrepreneurship in the program, a business plan. Participants are encouraged to employ relevant concepts and insights that they have acquired during the program.

Course Objectives and Deliverables

By the end of this course, we expect you to deliver a capstone project that demonstrates solid research skills and an ability to use what you have learned during the entire program. Potential project topics will be presented to you during session #1. We limit the pool of topics that you can choose from so that you work outside your comfort zone. It will also enable the faculty to better coach you.

By session #2, you must join a team and choose your topic. Before that session, each student will fill out an online form and rank project topics by order of preference. You must explain your preference in that form. You are encouraged to select a topic that fits your academic and professional background and interests.

The next few sessions will be dedicated to learning the proper use of research methods and applying them to your chosen project. On session #7, this will lead to the submission of a Research Report (more details below).

You will then move to the next step of your team project: building a Business Case (due session #11), then a Proof of Concept Plan (due session #15).

The real outcome of the course isn't just the "Project" itself: it is the individual experience that you will gain from such a multi-dimensional research and problem-solving process.

Teaching methods

Once you choose a topic, it will be up to you to scope your project more specifically, to define your goal and objectives, your methods to achieve them, your sources, the format of your deliverable, and how exactly to organize your time.

This project will require you to remember various methods, concepts and skills you have learned in multiple disciplines during your program, to perform primary and secondary research, to use quantitative and qualitative data, to manage your teamwork, among many other skills.

Lectures will be limited. You are expected to demonstrate your research and learning skills by seeking additional material independently and using it appropriately. However, you will receive lectures and guidelines on research methods in the beginning of the course and will review examples of reports in the second part of the course.

Project Guidelines

Potential Topics

By session #2, you will need to rank by order of preference the potential project topics and explain your choice. During session #2, we will try to form teams based on your preferences. It is acceptable to have more than one team per project if they coordinate their interviews (to avoid reaching out to the same person twice.)

- Research report, business case and proof-of-concept plan for an application of AR/VR in a sector of your choice (preferably, in retail/ fashion; or in healthcare education)
- Research report, business case and proof-of-concept plan for a chatbot powered by AI (involving Natural Language Processing) in a sector of your choice (potentially, in retail/ fashion)
- Research report, business case and proof-of-concept plan for Deep Learning-related applications
- Research report, business case and proof-of-concept plan for a new ERP in an Engineering Procurement and Construction Management firm
- Research report, business case and proof-of-concept plan for product innovation in a Building Equipment manufacturer based on ASICs (Application Specific Integrated Circuits) (Smart Buildings/ Smart Cities)
- Research report, business case and proof-of-concept plan for an Industry 4.0 & Lean Enterprise initiative in an established organization
- Others: You can submit a project related to an organization where you have direct access

Project Process

Team size will be ideally between 3 and 5 students (not more than 5). The purpose of your team is to act as a consulting team specialized in management of technology and:

1. Become familiar with your market needs and technology environment (research phase)
2. Identify a real organization that could benefit from your technology and demonstrate why (building a business case)
3. Plan how that organization could test your technology to validate your business case (proof-of-concept plan)

Research Report

Once you have selected a company, your first task is to prepare a research report on the company's strategic environment and trends: what customer needs does its technology address? Who does it compete against? What are the opportunities and threats in its sector? Do customers have unmet needs? What are the major strategic trends and technology innovations? How do you project the company's

market in the next five years? How would you develop a technology strategy accordingly? How does the company fit in its customers' own technology strategies?

Two instructors will coach you through this phase: one focused on research methods and the other focused on industry-specific and business-specific. You are expected to use a variety of research methods and sources, such as: scientific publications; patents review; competitive analysis (including start-ups and more established companies); professional and industry-specific literature, conferences and trade shows if applicable; first-hand interviews with industry experts (e.g. identifying NYU alumni on LinkedIn who might be open to assisting).

The outcome is a 10-to-20-pages single-spaced Microsoft Word report and a 15-slides presentation (approximately) to be briefly presented in 10 minutes.

Business Case

In this second phase, you will identify a potential user for your technology, then build a "business case" for the adoption of your technology. The purpose of the business case is to help your user evaluate the cost/benefits of adopting your technology and to support their decision-making.

Your business case should start with an understanding of the user's context, problems, goals, and needs. You will then elaborate and quantify the rationale for adopting your technology. You should try to demonstrate that the "cost of doing nothing" is sufficiently high to require action, and that your proposed solution is the best course of action (financially and through other relevant criteria). This might involve additional research and data collection and analysis.

Proof-of-Concept Plan

This third phase can start while you write your Business Case. The purpose is to identify with the user an opportunity for a proof of concept, pilot, or sandbox test of your technology. You will develop a project plan, including how the user can implement your technology and assess whether your business case was correct. This proof-of-concept plan should demonstrate that you are able to integrate in a concrete project multiple management of technology dimensions: technology itself, but also organizational, commercial, financial and otherwise (as applicable).

Grading

You will be graded as follows:

- Individual test on research methods (most likely on session #7): 25%

- Research Report: 25%

- Business Case: 25%

- Proof-of-Concept Plan: 25%

Project assessment rubric	Degree of mastery (10 = exemplary)
Research Report (25%) Analyze context (industry's competitive dynamics, major strategic trends) Analyze targeted users' problems, needs, unfulfilled needs Examine current solutions available + their limits Use relevant secondary data (articles, reports) thoughtfully Sources properly quoted and used (including literature, industry publications, industry experts, primary research -interviews). Use of Research Methods learned in class **Business Case (25%) and Proof of Concept Plan (25%)** Analyze user's internal and external context, current situation, goals, needs Assess pains & gains (for current situation and post-solution) Multi-dimensional feasibility study for your solution implementation Solution development and implementation plan (multi-functional) Use of primary data (identify and analyze a targeted organization for feedback and/or to help plan a Proof of Concept) Proper plan for proof of concept (multi-functional if applicable) Expressly use tools and concepts your learned in your graduate program Articulate and explain the path you followed through the entire project (methodology) Use relevant data, both quantitative and qualitative, illustrations, tables, diagrams, graphs (external + original work) Professional-grade presentation "presentable to the outside world" Include a one-page executive summary, written like a short impactful article summarizing your work	

Course schedule

#	Topics	Dates
1	**INTRODUCTION** Course overview, team formation, project matching (jb)	**Sept 4**
	PHASE 1: RESEARCH	*Sept 11-Oct 23*
2	Finalize project choice (jb)	Sept 11
3	Learn research methods; start applying to your project research (ca)	Sept 18
4	Learn research methods; continue application to your project research (ca)	Sept 25
5	Learn research methods; continue application to your project research (ca)	Oct 2
-	*No class (classes meet according to Monday calendar)*	Oct 9
6	Continue application to your project research (jb)	Oct 16
7	Learn research methods; continue application to your project research (ca)	Oct 23
	PHASE 2: BUSINESS CASE & PROOF OF CONCEPT PLAN	*Oct 30-Dec 11*
8	Submit: Research Report; start working on your Business Case (ca)	Oct 30
9	Debrief from Research Report; Test on Research Methods (ca)	Nov 6
10	Continue work on your Business Case; start work on Proof of Concept (jb)	Nov 13
11	Class Presentation: Business Case (jb, ca)	Nov 20
12	Continue work on your Proof of Concept (jb)	Nov 27
13	Continue work on your Proof of Concept (jb)	Dec 4
14	Final Presentation & Submit Complete Project (jb, ca)	Dec 11

NB: ca= Caitlin Augustin / jb= Jabril Bensedrine expected faculty for the session; This **schedule may be adjusted** based on each team's specific project constraints, actual classroom progress, and other contingencies.

Moses Center Statement of Disability

If you are student with a disability who is requesting accommodations, please contact New York University's Moses Center for Students with Disabilities (CSD) at 212-998-4980 or mosescsd@nyu.edu. You must be registered with CSD to receive accommodations. Information about the Moses Center can be found at www.nyu.edu/csd. The Moses Center is located at 726 Broadway on the 2nd floor.

NYU School of Engineering Policies and Procedures on Academic Misconduct

A. Introduction: The School of Engineering encourages academic excellence in an environment that promotes honesty, integrity, and fairness, and students at the School of Engineering are expected to exhibit those qualities in their academic work. It is through the process of submitting their own work and receiving honest feedback on that work that students may progress academically. Any act of academic dishonesty is seen as an attack upon the School and will not be tolerated. Furthermore, those who breach the School's rules on academic integrity will be sanctioned under this Policy. Students are responsible for familiarizing themselves with the School's Policy on Academic Misconduct.

B. Definition: Academic dishonesty may include misrepresentation, deception, dishonesty, or any act of falsification committed by a student to influence a grade or other academic evaluation. Academic dishonesty also includes intentionally damaging the academic work of others or assisting other students in acts of dishonesty. Common examples of academically dishonest behavior include, but are not limited to, the following:

1. Cheating: intentionally using or attempting to use unauthorized notes, books, electronic media, or electronic communications in an exam; talking with fellow students or looking at another person's work during an exam; submitting work prepared in advance for an in-class examination; having someone take an exam for you or taking an exam for someone else; violating other rules governing the administration of examinations.

2. Fabrication: including but not limited to, falsifying experimental data and/or citations.

3. Plagiarism: intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise; failure to attribute direct quotations, paraphrases, or borrowed facts or information.

4. Unauthorized collaboration: working together on work that was meant to be done individually.

5. Duplicating work: presenting for grading the same work for more than one project or in more than one class, unless express and prior permission has been received from the course instructor(s) or research adviser involved.

6. Forgery: altering any academic document, including, but not limited to, academic records, admissions materials, or medical excuses.