

Applying Innovation - APS1013 LEC1010 – GENERIC SYLLABUS – NO DATES – See Course Web Site on Portal

Course Outline

APS1013 course – Applying Innovation will teach students **the application and integration** of the tools and techniques of innovation management including; strategic and systems thinking, business process management, creativity and problem solving, solution design & implementation, effective organizational teamwork, leadership, and project management. This seminar style course aims to equip students with the knowledge and skills to apply the tools of creativity and innovation to solve a real world technological business problem. Applying innovation will enable students in a team approach to actually use the tools in the class and on an industrial project either at their employer (preferably) or an external enterprise. This course will also incorporate both academic scholarly papers that will build on the readings in the Management of Innovation APS1012 course. In addition the instructor will provide coaching based on many years of hands on practical experience solving technological problems in a variety of industry sectors. Though not mandatory it would be ideal if students have completed the course APS1012 - *Management of Innovation* that provides students with a conceptual understanding of the broad field of strategic innovation.

There is one core book for the course that will serve as common reading each week (also used for APS1012 - Management of Innovation) **Sustaining Innovation Through Problem Solving** (Industrial Press, New York 2008). Full disclosure: I wrote this book and will also use in depth case examples from professional management consulting projects. **I will provide hard copies at the discounted author rate.**

Upon course completion, the participants will be able to apply the tools of innovation management science to:

- Assess customer needs (internal or external)
- Assess an organizations capabilities to manage a change initiative
- Apply business modeling techniques to decompose and map business processes
- Apply structured problem solving process and identify alternative solutions.
- Develop and work in an effective organizational team.
- Apply the principles of socio - political management to manage change
- Applying strategic thinking to solve complex technological problems

Course Structure and Content: Applying Innovation – Tools and Methods is divided into three themes and 12 modules and an industrial based project assignment:

Industrial Project – Hands on Performance Improvement Assignment

- Select an Industrial Partner - preferably an employer or external company (transportation, energy production and distribution, engineer-to-order manufacturing, process manufacturing, public services, consulting engineering and management consulting)
- The instructor has recruited some companies to participate
- Depending on class size form into teams (3-6 people per team)
- Apply the 17 step Innovation Process Management Methodology – Attend 2-3 hours training on the process in the 2nd module

- Provide project progress update at each seminar and develop project strategy **in the class.**
- The “homework” element of this class will be the work conducted on the industrial project.
- **PLEASE NOTE** – The instructor **will not visit** the industrial companies with the teams but will be in contact by telephone occasionally.
- **Finalize, package and hand in project report** – Timing is very important to Applying Innovation! **A hard copy and a soft copy of the paper** (using Microsoft Word, NOT an Adobe Acrobat PDF!) must be delivered by email no later than **?????** to my email address, stephenc.armstrong@utoronto.ca, the hard copy to be given to the engineering reception at 44 St George Street (white building next to Bahen Centre)

Important Dates: Depends on the semester- See course web site syllabus

- ?? – First Seminar: Orientation – Overview, Planning, and Reading Assignments
- ?? - Final date to **add** full-year and September session courses
- ??– **No Classes**; Thanksgiving Holiday and Reading / Project Week
- ?? - Final date to drop September session courses without academic penalty
- ?? – Last Seminar and submission of Book Review
- ?? – Submission of final report
- ?? – All coursework grades submitted

Learning outcomes

Knowledge and Comprehension:

- Understand when to use the tools of innovation management on the job.
- Explain the various parts of the innovation process and their interaction
- Experience and manage the politics of change
- Experience how to think and work strategically

Intellectual Skills (Analysis and Synthesis)

- Students will develop the necessary competencies to actually articulate and solve organizational and business problems systematically with strategic thinking and a design mentality.

Practical Skills (Application and Evaluation)

- Students will use a 17 step process management and problem solving methodology to solve problems on an industrial assignment – this is covered in depth in the textbook

Class Participation. This course will be taught through seminar style classes that include reviewing module video lectures, critical reading review and project discussion. Industrial projects will be conducted in teams. Because of this style of teaching, **regular class attendance and involvement is mandatory and can mean the difference of a grade** - this is a highly interactive seminar that fosters a discovery based experiential learning. I understand, though, that occasions do arise where you have to miss a class. Therefore, I will allow each student *one unexcused absence without any penalty*. Beyond that, any further absences (other than due to illness or family emergencies) will negatively impact your participation rating.

Critical Reviews (CR). The critical writing portion of this course will be incorporated into the weekly course online discussion board. Online discussions will be based on the subject of the module lecture and the material in the course book. Five (5) online discussions are required (300-400 words). There are at least 6 academic papers that support each module – this is discretionary reading. **If you incorporate / reference ideas from the book and the academic papers in your discussions you get more marks.** A CR book or special interest review is required of an applied innovation book or topic (700 – 1000 words). It is important that you think critically – what are the benefits and pitfalls of the author’s views or the case study. **It is absolutely essential that students have a mastery of English – Reading, Writing, Verbal.**

Final Project Report. For the final paper the team will document the work conducted on the industrial project defining the problem you set out to solve, the method you took to solve it and the results. The report should be between 10,000 – 15,000 words double-spaced, 12 point font. Each team member will be responsible for an element of the report (approximately 2500-4000 words per student). You **will not** be assessed on whether you actually implemented a solution. Instead **you will** be assessed on your ability to follow a structured innovation and problem solving process including data gathering, solution development and working with people (fellow students and industrial company / employer staff) to acquire and synthesize information. And more importantly you will be assessed on the creativity you exhibit as individuals and as teams. **The industrial project report is due ???** to my email address, stephenc.armstrong@utoronto.ca - the hard copy to be given to the mechanical & industrial engineering graduate office

Course Grading: The components of the final course grade will be weighted as follows:

Final Team Report (includes a charter-5% & project overview PPT present-5%)	30%
Two (2) written critical reviews- (includes one 6 min verbal CR presentation)	30%
Class Participation & engagement–Inclass Discussions of Mod Video & Questions	30%
Book Review or One Special Interest Topic Research Review	10%

Office Hours. Because I am part time faculty it may be difficult to meet all of you individually in a timely manner because of the class size but I will answer email queries and follow-up.

Theme 1 – Innovation and Process Management Methodology

Mod 1 –Orientation and Planning – overview of the course and themes – Voice of the Customer, Innovation Management System, Industrial Partner Projects and Non Disclosure Agreement

Mod 2–2-3 hour Seminar on applying a 17-step innovation methodology (based on the course book). This seminar will enable students to begin the industrial project by identifying the deliverables that are required as the course unfolds.

Mod 3 –Business Analyses - Process mapping and workflow analysis, problem identification, Company Assessment – Stages of Excellence Tools, Problem identification

1st Industrial Trip Choose an issue with current employer or collaborate with an external company to document the problem to be solved. (Customer / stakeholder issues, establish business issues, understand the process, measures, products and services)

Mod 4–Effective Organizational Team Meetings - Understand how to conduct effective innovation team meetings and review findings from industrial visit in the class and establish how to structure a problem solving initiative – teams present issues

Theme 2 - Creativity and Problem Solving Tools and practices

Mod 5 –Lecture on Conflict Resolution & continue reviewing project problem Solving and progress. In the lecture we will understand how to address the methods one can use to address conflicts that are certain to arise on Projects.

- What is Conflict in the Workplace?
 - Understanding Conflict
 - Features of Conflict
 - Causes of Conflict
 - Escalators of Conflict
 - Dealing with Conflict
 - Exercise
 - Conflict Management Strategies
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- Business Process Reengineering

NO Class During Reading Week– Use to Work on Final Report

2nd Trip Establish a cause and effect fishbone diagram to gather root cause data - each student would own an individual fishbone arm.

Mod 6 –Decision Making in the Creative Process and each industrial project team presents the cause and effect diagram and root cause analysis and begin to identify alternative solutions – all teams provide input to other teams findings

Mod 7–: Creativity & Solutions Development - Creative Thinking Skills and tools - Edward De Bono- Lateral thinking & 6 thinking hats, Strategic Systems Thinking & Design Thinking, & discuss project progress

3rd Trip Present the alternative solutions to the industrial company for management feedback

Theme 3 - Management of Change Tools and Practices

Mod 8 –Assessing an Innovation Management and Organizations Change Management Capabilities & discuss project progress. We will explore how to assess a companies change management capabilities including the following categories:

- Change Readiness: Business strategy, Organization structure and management style.

- Programme Structure and Focus: Scope and alignment, Resources, Customer focus.
- Programme Management: Governance, Measures, targets and tracking, Planning and coordination, Process sophistication, Change management skills
- Results: Financial, Customer Satisfaction, Behavioral

Mod 9 –Implementation Planning & Emotional Intelligence - Present the project solutions and learn how to prepare implementation plans & discuss project progress. We will also explore the emotional skills require to many successful change projects. These include:

- The three components of Excellence
- Attitudes of high performance
- Rapport-The basic building block of communication
- Matching emotional tempo
- Seeing interactions from different viewpoints
- Reframing-Seeing or giving different perspectives
- Establishing common understanding and effective goals
- Managing your emotional state for top performance

Mod 10 –Introduction to Management Consulting & discuss project progress. This class will explore the management consulting profession. Tens of thousands of people are called "consultants" - it can range from a retired executive signing a "consulting" contract to offer advice to a company or it can be a "consultant" hired to do flower arrangements or make travel arrangements. So what is the significance of the coupling of the words "management" and "consulting". From influencing some of the worlds mightiest companies and moving entire markets how do MC's think and how is the industry structured? What does a typical career path in MC look like? Why are MC's criticized so much and what is the controversy surrounding the profession? Is it a true profession?

4th and final Trip Presents solution and the way forward presentation to the company management and get feedback.

Mod 11 –Managing Social and Political Power Games & discuss project progress. We explore what socio-political management is and its relationship to the human dimension of change. In particular we will analyze how power is distributed and yielded in companies and the role of the engineer in this dynamic. We will unpack the “change agents” toolbox that deals with communication skills, political positioning tactics, and change management methodology. And finally we will explore the concept of the shadow organization and the economic organization.

Mod 12 –Present final project draft report (PowerPoint format) and receive critical feedback from the rest of the class.

Other Module Options

- Chaos and Complexity Management
- The Role of Change Agent – Internal & External
- Change Management Orientation
- Accelerating Change Overview

- Various MOC Case Studies
- Super change agent training
- Communication Skills For Power
- Charters Roles Deliverables
- Skills to Run - 1 Small step
- The Management Consulting Difference
- The Role of the Internal Consultant - Lessons From Organizational Change
- Art of Avoid Political Minefields
- Unwritten Rules Concepts
- Unwritten Rules - Case Study
- Managing Political Conflict
- Making Change As an External Management Consultant
- MOC & ERP Trainer- Workshop
- MOC - BPR Communications Approach
- MOC -BT Risk Management
- MOC Governance Approach
- Admin v Manager v Leader
- Business Transformation Assessment
- Managing Enterprise Wide Change Performance Management
- Corporate Lessons From a Humorous Perspective