COURSE SUMMARY

Imagine you’re an entrepreneur in search of a compelling new opportunity around which to build a business… or a scientist or engineer with a breakthrough new technology… or a corporate executive looking to drive double digit growth within a stagnant sector… or a venture capitalist seeking to evaluate a potentially revolutionary new offering.

How do you turn an initial idea or opportunity into a true innovation that creates real value? How do you identify and address unmet needs within the marketplace – as well as in markets that do not yet exist? How can you predict your potential customers’ reactions to a product that doesn’t exist, before you can even show them a prototype? How can you evaluate alternatives at the earliest conceptual stages of development? And, most importantly, how can you (and your company) become consistent, repeat innovators, doing this not just once but repeatedly over the course of years?

The answer to these and many other questions is to make innovation a process – something more than just the ad-hoc, intuitive, ‘gut-feel’ of an individual. In this course we get down to the brass tacks of a process for innovation – the practical methods and tools you can use on a daily basis to improve your ability to discover, gather, build and synthesize the knowledge that enables innovation. This course will provide you with the solid foundation you need to become a consistent, repeat innovator.

COURSE OBJECTIVES

Driving the Innovation Process is a graduate-level elective designed to provide you with the understanding, skills and tools to implement an innovation process. This course combines insights from recent research in innovation, marketing, management, economics and sociology with cutting-edge tools and techniques being employed by leading companies around the world.

By the time you complete this course, you will be able to implement an innovation process that will help you succeed as a technologist, manager, executive or entrepreneur.

ELIGIBILITY

This course is open to a limited number of graduate students from the University of Michigan’s Ross School of Business and College of Engineering.
COURSE DESCRIPTION

Driving the Innovation Process is a 3-credit, 14-week-long course. We will meet 14 times, for 3 hours per session. The class format is highly interactive and will vary from session to session. You should expect to encounter:

- Presentations by the instructors and guest speakers
- Full-class discussions and exercises
- Small-group dialogs and activities
- Role-play simulations, student presentations, and more

To help make the course material as relevant as possible, we will employ many examples of technologies and companies that reflect the concepts being discussed. Within each session we will discuss examples from modern life, including everything from Dyson vacuums, the iPod, and the Segway Human Transporter, to the Grameen Bank, the U.S. Postal Service, and Multi-Strike Poker. In addition, throughout the course we will follow a running example in greater detail, in order to understand how an actual company with a cutting-edge technology is applying the process and tools described in this course.

COURSE MATERIALS

This course does not use a textbook. Instead, we will rely on a set of engaging and informative readings contained in the course pack, as well as from materials that can be accessed via CTools.

Course Pack – Please purchase a copy of the course pack at your earliest convenience. It contains required readings that you should read prior to each class session. These readings consist of carefully selected magazine/journal articles and excerpts from trade books in the areas of innovation, marketing, management, economics, history, and sociology. These materials are copyrighted by their respective authors/publishers, so the price of the course pack covers any applicable licensing fees as well as printing costs.

Supplemental Materials – Administrative documents and other helpful materials are available on the course website (https://ctools.umich.edu/portal?site=xxxxxxxxxxxxxxxx). Please visit the site to take full advantage of these resources.

Media Sources – Self-directed readings from other media will also be integral to this course. Students are asked to select, explore, and analyze real-world situations in light of the central concepts presented in the course. You may be surprised by how everyday business events become more predictable in this new context.

COURSE REQUIREMENTS AND EVALUATION

Requirements

In the broadest terms, students are expected to be actively engaged with the class. This means coming to class prepared, contributing to class discussions and exercises, and tackling the following assignments:

Team Project

Students will work in teams of four to apply the innovation concepts and tools taught in the course to a specific, real-world technology. Students will participate in the boundary definition, concept mapping, ideation, knowledge elicitation, and modeling processes. Based on their experiences, students will produce a set of core innovation documents,
including community and technology maps, an engagement display, a community member profile, and an influence diagram. At the end of the course, each team will share its work with the entire class.

**Innovation Journal & Essay**

During the course, each student will maintain an “innovation journal” in which he or she will note thoughts or observations about current real-world business and social events that illustrate key concepts related to innovation – that is, to the concepts in the course, to innovative ideas, products or services, etc. These entries may be triggered by items in the media, personal conversations, class engagements, and the like. Toward the end of the 14 weeks, each student will be responsible for writing a 1,000-word essay (about four pages), based on one or more ideas captured in the journal, that connect insights from the class with their journal observations and thoughts.

**In-Class Innovation Events**

Part of the innovation process involves innovation events that consist of group sessions. Three of these events will be held during class hours at the appropriate times during the course. An Ideation Session, a Design and Problem Solving Session and a Decision and Planning session will be held. These will be ‘hands-on’ working sessions and students will be expected to participate in these events.

**Examinations**

There will be two exams during the course:

- **Midterm Exam** – A short-answer, closed-book exam designed to test students’ understanding of the concepts taught during the first half of the course.

The exam will test students’ ability to identify the salient innovation issues in fuzzy, real-world scenarios and to demonstrate an understanding of when, where, and how to apply the appropriate tools.

**Evaluation**

Course grades will be calculated as follows:

- Team Project: 40%
- Innovation Journal & Essay 20%
- Midterm Exam 20%
- Class Participation 20%

The emphasis in grading is to provide a mix of evaluation from individual to group effort, and from prepared to spontaneous application of the concepts.
COURSE ADMINISTRATION

Honor Code
Following the Honor Codes of the Ross School of Business and the College of Engineering, all group assignments are to be done by group members only. Exams and solo assignments are to be done individually.

Class Schedule
Driving the Innovation Process meets on Tuesdays from 7:00-10:00PM in Wyly Hall (Room 0768) at the Ross School of Business. Due to this course’s highly interactive nature, attendance is critical. In order to ensure that everyone gets as much out of this course as possible, students are expected to attend all sessions. Please schedule any meetings, interviews and other appointments at times that do not conflict with this class. If you find that you must miss a session (due to illness, a family emergency, or a similar reason), please email the instructors ahead of time.

Contacting the Instructors
We encourage you to use email to communicate with us about any issues related to the class. All emails will receive a response within one day.

Office Hours
The instructors are available for office hours as follows:

[Days, times & locations TBD]
If you need to schedule another time, please e-mail us to schedule an appointment.
## Sessions

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<thead>
<tr>
<th>Session 1</th>
<th>The State of Innovation Today</th>
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<tr>
<td>January 10</td>
<td>What is going on in innovation research today? What exactly is innovation and why is it so hard to be a consistent, repeat innovator? What are the situations that innovators face? What do companies and individuals need to do to deal with the new and rapidly evolving world?</td>
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<td><strong>Topics:</strong></td>
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<tr>
<td>- Introductions</td>
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<td>- About the course</td>
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<td>- What is Innovation?</td>
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<td>- Innovation today</td>
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<td><strong>Required Readings:</strong></td>
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<th>Session 2</th>
<th>The Nature of Knowledge</th>
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<td>January 17</td>
<td>Innovation is ultimately a knowledge process. The difficulty arises in the type of knowledge that you need to learn and where that knowledge resides. Over 90% of the knowledge you need to know in order to innovate is inside people’s heads and over 90% of that knowledge resides in the unconscious mind or is ‘tacit’. What is the knowledge you need to know, where is it, how is it structured, how do you get at it and what do you do with it once you have it?</td>
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<tr>
<td><strong>Topics:</strong></td>
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<tr>
<td>- Innovation is a knowledge process</td>
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<td>- Types of knowledge, their attributes and structure</td>
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<td>- Knowledge functions: gathering, managing, assimilating</td>
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<td>- Knowledge synthesis -- An introduction to systems thinking</td>
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<td><strong>Required Readings:</strong></td>
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Session 3  Innovation Process Overview
Jan 24

We will learn what an innovation process is and how it works. We will review a number of innovation processes proposed and in use by various corporations. We will introduce and discuss a specific innovation process and discuss it’s attributes of non-linearity, knowledge driven timing, cycles of activities and how such a process integrates with other corporate processes (such as the NPD or New Product Development process).

Topics:
• A review of innovation processes
• The innovation process and the corporation
• An innovation process: The 9-fold Order
• The time domain: events, projects, process

Required Readings:
• Excerpt from Foster, Richard & Kaplan, Sarah. *Creative Destruction: Why Companies That Are Built to Last Underperform the Market -- And How to Successfully Transform Them* (Currency, 2001): Chap. 1, "Survival and Performance in the Era of Discontinuity" (pp. 7-24); Chap. 3, "Cultural Lock-In," (pp. 61-89); Chap. 5, "The Gales of Destruction" (pp. 125-142).


Session 4  Getting Started; Scoping & Focusing; The Technology
Jan 31

How do you launch an innovation initiative? What are the preparatory steps to take before diving into the process? Understanding the strategic intent and context within which innovation will take place is critical to success.

One of the key drivers of any innovation process is technology. Understanding technology as a transformation of material, information or behavior, and being able to understand the effects of those transformations is absolutely necessary.

This session will introduce effective methods and tools to define strategic intent and context, and to precisely understand a technology’s effects.

Topics:
• Launching an innovation initiative
• The strategic context
• Technology’s role in innovation
• Using technology knowledge

Required Readings:
Session 5   Building a Knowledge Community: Conducting Community R&D
Feb 07

Where do we find the diverse communities of experts, users, partners and even competitors that we should engage with? How do we use this community to experiment and gain knowledge? What do we do with the knowledge we gain? Community R&D is the corollary of technology R&D, and is just as important. In this session we will learn how to build a knowledge community and tap into the community's rich diversity of knowledge and perspectives. We will walk through constructing an effective engagement display.

Topics:
- The what & why of community R&D
- The nature of communities
- Building a community and community mapping
- Engaging the community

Required Readings:
- Excerpt from Wenger, Etienne, et al. Cultivating Communities of Practice (HBS Press, 2002): Chap. 1, "Communities of Practice and Their Value to Organizations" (pp. 1-22); Chap. 3, "Seven Principles for Cultivating Communities of Practice" (pp. 49-64).
### Session 6  Eliciting Knowledge: What People Know and How they Think

**Feb 14**

The most effective thing that you can do as an innovator is to learn how to engage with people so that you learn what they know – and how they think. In this session, we will introduce concepts that are critical to get at this knowledge. We will teach various techniques of elicitation and have a hands-on session where you will use these techniques using a real-world example taken from a current situation. Finally, we will discuss how to use the concept of ‘Personas’ to codify what is known about how people view, value and adopt a new innovation.

**Topics:**
- Customer choice: understanding future decisions
- Elicitation: Getting knowledge from a person
- Personas: making sense of diversity
- The community member profile

**Required Readings:**
- Excerpt from Zaltman, Gerald. *How Customers Think: Essential Insights Into the Mind of the Market* (HBS Press, 2003): Chap. 7, "Reading the Mind of the Market" (pp. 149-163); Chap. 9, "Memory, Metaphor & Stories" (pp. 189-210).
- Excerpt from Gladwell, Malcolm. *Blink: The Power of Thinking Without Thinking* (Little, Brown, 2005): Chap. 3, "The Warren Harding Error" (pp. 74-98); Conclusion, "Listening With Your Eyes" (pp. 245-254).

### Session 7  Midterm Exam, Team Meetings & Project Discussions

**Feb 21**

In-class, closed book examination. Team meetings, project discussion & status updates.

**Feb 28**

No class session due to Spring Break

### Session 8  The Innovation Process: Rhythm and Events

**March 07**

There is a rhythm to an innovation process that unfolds over time. As the process unfolds, knowledge matures: ideas turn into product concepts and opportunities turn into markets. The day-to-day activities contribute to the overall process evolution and are punctuated by specific events and milestones. Understanding this rhythm helps to make sure the process moves forward as fast as is practical and necessary.

As part of this session, we will have a hands-on innovation event – an Ideation session. We will take what is known about a new customer need/desire and work through a structured brainstorming event. We will discuss the proper preparation for such a session, the do’s and don’ts and what to do with the results of these sessions.

**Topics:**
- The “Breathe-in, Breathe-out” Rhythm
- Timelines and deadlines in a knowledge driven process
Session 9  Value Modeling Part I: Understanding Systems and Causality

March 14

As you gather, discover, create and build knowledge, how do you manage that knowledge? What can you do with it? How do you use it to gain insight? In this session we will learn various methods and tools that aid you in organizing, analyzing and synthesizing the knowledge you are gathering. We will specially focus on using knowledge synthesis methods for turning tacit knowledge into explicit knowledge and then using that knowledge in collaborative efforts to gain insight and understanding about plausible futures. The focus of this session is on using Systems thinking skills to build dynamic models of causality that will be used to gain insight into plausible futures.

Topics:
- Why model, what to model
- Building dynamic innovation models
- Putting knowledge into a model
- Validating a model: precision and accuracy

Required Readings:
Session 10  Value Modeling Part II: The Innovation and the Customer
March 21
How do you model the mind of a customer to determine their response to an innovation? How do you aggregate these individual decisions to see how the market will evolve and what makes a difference?

As part of this session, we will have the second hands-on innovation event – a Design Burst session. We will use our knowledge of possible solution concepts and create specific product concepts.

Topics:
- Evaluating an Idea, Concept and Product
- Putting the customer's mind in the model
- Linking effects to experiences to value
- Adoption and diffusion - the dynamics of success

Required Readings:
- Excerpt from Rogers, Everett. Diffusion of Innovations, Fourth Edition (The Free Press, 1995). Chap. 6, "Attributes of Innovation and Their Rate of Adoption" (pp. 204-251).

Session 11  Gaining Insight: Scenarios and Storyboards
March 28
Models can't predict the future, they can merely show plausible futures but any model, even simple spreadsheet-based models, can lead to insights if they are constructed and used properly. A good model can be used to explore potential future scenarios and uncover emergent behavior and unintended consequences. In this session you will learn how to use models as a guide to determine what makes a difference and how the future could be influenced?

Topics:
- Using a model
- Scenarios and storyboards
- Evaluating and prioritizing alternatives
- Creating a Valuation Assessment

Required Readings:
Session 12  Decision Making & Planning: Moving from Insight to Action

April 04

How do you use all of this knowledge to make decisions? What are some effective tools for rationally prioritizing alternatives? How do you move the chosen concepts into the product development process? This session will focus on these and other issues in the final phase of moving an idea into reality.

Part of this session will be a hands-on innovation event – a Decision session – where you will participate in a group exercise to evaluate, prioritize and decide on critical aspects of the products under consideration.

Topics:
- The dynamics of decision making
- Preparing for action
- Connecting to the operational excellence processes
- Leading to the plan

Required Readings:
- Excerpt from McMillan, John. Reinventing the Bazaar: A Natural History of Markets (W.W. Norton, 2003): Chap. 1, "The Only Natural Economy" (pp. 3-14); Chap. 4, "Information Wants to Be Free" (pp. 41-52); Chap. 9, "The Embarrassment of a Patent" (pp. 103-118).

Session 13  Putting it All Together: Team Presentations

April 11

Team project presentations

Session 14  Review & Exhortation

April 18

What do you do now? What do you do if your company, division or group lacks the ‘culture of innovation’? How can you be effective at the ‘grass roots’ level? What do you do if you’re all alone? We will discuss ways that you can be effective going forward and fostering change no matter what type of culture or environment you find yourself in.

Discussion and Questions and Answers. Class evaluation.

Topics:
- Why Innovation Matters
- The Value of Process
- Culture, Leadership and Organization
- Making a Difference

Required Readings:
- Excerpt from Wheatley, Margaret J. Leadership and the New Science: Discovering Order in a Chaotic World (Berrett-Koehler, 1999): Chap.
2, "Newtonian Organizations in a Quantum Age (pp. 27-47); Chap. 6, "The Creative Energy of the Universe--Information" (pp. 93-112); Chap. 8, "Change: The Capacity of Life" (pp. 137-155).
**INSTRUCTORS**

**Larry Schmitt, Ph.D.**
Dr. Schmitt is a serial entrepreneur and the current President of Inovo Technologies, Inc. Inovo's mission is to help companies realize the full economic value of their technologies, talents, knowledge, and market position. Inovo works as collaborators to augment clients' organization and activities, helping them become more dynamic, innovative, exciting and successful. Unlike broad-based business consultants, Inovo specializes in new venture creation and new technology commercialization. Inovo has a proven model and process for harnessing the economic value of innovative technologies.

**Tim Faley, Ph.D., MBA**
Dr. Faley is the managing director of the Zell Lurie Institute for Entrepreneurial Studies and managing director of the Wolverine Venture Fund (instructor for ES701 – WVF). He was formerly the director of technology transfer for UM’s College of Engineering. Prior to his arrival at UM, he spent 15 years with the Dow Chemical Company, his last assignments being in technology licensing and corporate venturing.