

Michigan State University

College of Social Sciences

EC 491: Advanced Topics in Economics (Economics of Innovation and Entrepreneurship)
(Soon to be EC 465: Economics of Innovation and Entrepreneurship)

Spring 2018

Mondays and Wednesdays 10:20-11:40 am
110 Berkey

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Student Learning Outcomes and Objectives

EC 491 (Economics of Innovation and Entrepreneurship) is a two-part course, roughly corresponding to the “theory” and “practice” of turning research and development activities (whether academic, privately, or publicly funded) into productive businesses that drive the US economy.

The first part of the course runs for eight weeks, from the start of class until Spring Break, and ends with the midterm exam on March 28. It emphasizes the payoffs to research and development (R&D) and the links between R&D, innovation, and success of for-profit business enterprise in the USA. This first part of the course has an emphasis on three specific learning outcomes: (1) an understanding of the links among invention, innovation, and entrepreneurship; (2) understanding the difference between product and process innovations on the US economy and (3) analyzing the returns to research and development to establish the appropriate levels of each. This material builds on some of the skills acquired in EC 301 (Intermediate Microeconomics), although the technical aspects are minimal. In the first half of the course, class time is spent in a mix of lecture and interactive exercises. Course readings are journal articles and book chapters. It is primarily descriptive and positive; it shows what actually happens and why.

The second part of the course emphasizes entrepreneurial strategy, which is what entrepreneurs do to work with what they have to get where they want to be. You might think of it as prescriptive and normative, in contrast to the first half of the course – it shows what to do and how, to accomplish innovations in practice. Because it builds on basic business knowledge, it complements EC 460 (American Industrial Structure and Behavior), as well as courses taught in the Broad School on strategic management and courses taught MSU-wide on entrepreneurship. This second part of the course is not like the first part; it’s experiential, focused on case discussion and interactive exercises rather than lecture, and ends with a project submission rather than an exam. The second half of the course has an emphasis on three specific learning outcomes: (1) familiarity with strategies specific for small or newly-founded firms, (2) an understanding of the process of gaining competitive advantage in new markets, and (3) exposure to analysis techniques designed to improve the risk/return profile of new ventures. Course readings are case studies, accompanying articles, and short pre-class calculations relating to individual students’ pre-entrepreneurship situations.

Course Prerequisite

Required: EC 301 or EC 251H (*Intermediate Microeconomics*) or Permission of Instructor.

Recommended: EC 460 (American Industrial Structure and Behavior) at least concurrently.

Course Materials: Cases and Non-Case Readings

For the first half of the course (eight weeks before spring break) we'll examine how innovation occurs in the economy – both theoretically and empirically. We'll start with a history of things that most of us take for granted – light and ice (good topics for mid-January in Michigan) and look at the innovations behind them.

The primary textbook (from which we'll read several chapters, but not the entire work) is *Beyond Sputnik: U.S. Science Policy in the 21st Century* by H.A. Neal, J.B. McCormick, and T. Smith. It is available free online (although you might want a paper copy, too; it's around \$35 at Amazon and elsewhere.)

To access MSU's full, free online copy of *Beyond Sputnik*, follow these steps:

1. Click the link <http://bit.ly/BeyondSputnik>.

or, if you prefer to use the Library website (and learn how the online resources work)

- 1a. Start at <http://lib.msu.edu>.

- 1b. Search for "Beyond Sputnik" in the search bar.

- 1c. Pick the second result in Books & Media "Beyond Sputnik [Electronic resource]."

- 1d. Choose "Connect to online resource via Ebook Central – Academic Complete – All users".

Regardless of how you got to the resource page, now:

2. Log in with your MSU ID and password.

3. You will then be taken to the book's page on ProQuest Ebook Central. You can read it online (unlimited access), download the entire book for up to 21 consecutive days (e.g., January 8-29), or download only the chapters you need as you need them.

A number of first-half materials will be distributed in-class or via D2L as well.

For the second half of the course (seven weeks after after spring break), there will be a packet of readings and case studies, access information for which will be distributed before the midterm. Unfortunately, these aren't free – several are case studies on which royalties are paid. The packet will cost about \$30.

Prior to class each week, you are expected to have read all the prescribed case material, to have considered the study questions, and to be prepared to participate in constructive class discussion. If you are not spending between 2-4 hours outside class each week preparing for these discussions – for whatever reason – you will miss many of the subtle lessons in it. If you are not planning to devote this time to EC 491, which is designed to prepare you for success as an entrepreneur but (by its nature, as a course on escaping employment) has relatively little value as a resume-builder, there is little point in attending the classes in the first place.

In the second half of the course, one intensive case discussion per week (the central uses of class time) will emphasize the preparatory analysis of strategic entrepreneurial decisions, problems of decision-making in an entrepreneurial context, and issues in implementing these decisions. In each case, we will identify generic strategic problems as well as problems unique to the case situation. We will either begin with a solicitation for several alternative policy recommendations (and then work back through the arguments that support or reject them as choices), or with an exhaustive analysis of the situation's

strategic aspects (which will lead us to some reasonable and consistent policies.) Our goal is to arrive at a relatively complete depiction of the challenges facing the entrepreneur/company discussed and then to generalize these challenges to other companies.

The non-case readings will underline common dimensions of the cases and highlight theoretical concepts, methods and frameworks relevant for entrepreneurs' strategic decisions. Some of these non-case readings are original materials; they are made available solely for classroom use in EC 491.

Grade Weighting Policy

The three categories comprising the EC 491 grade are **Midterm Exam**, **Class Participation**, and **Group Final Project**. 50% of your grade will be in your strongest category and 25% of your grade will be in each of the other two. Please note that this grading structure is designed to emphasize your strength (whether in classroom performance, or final project creation) while encouraging reasonably high performance in both categories. Letter grades will be assigned based on the weighted average of these three areas, modified as necessary by peer evaluation described below in "**Team Member Evaluation on Contribution to Final Project**" (q.v.). There is no forced curve.

Class Participation Policy

Active class participation is essential for EC 491. Class participation is more than attendance (for which I will be using the *Arkaive* app; please install it and give it permission to mark you present automatically. The Enrollment code is ***K40K***) -- it is active, informed involvement in class discussion. In the first part of the class (before Spring Break) there are approximately *eight* sessions which feature substantial opportunities for interactive class participation. In the second part of the class (after Spring Break, there are approximately *twelve* such sessions, for a total of twenty. As a guideline, for a student to receive the top level ("A") of the class participation grade, I expect active, informed participation in at least *twelve* of the interactive class segments. To receive the second level ("A-/B+") of the class participation grade, I expect active, informed participation in at least *nine* of the segments. To receive the third level ("B") of the class participation grade, I expect active, informed participation in at least *six* of the segments.

There is no way to make up for missed class participation opportunities. If you have missed a class, catching up is *far* superior to ignoring the material; although there is no final exam in EC 491, your livelihood may actually depend on knowing this stuff at some point! Particularly during the second part of the course, I encourage you watch the Online Minilecture and to come to office hours for an executive summary of the class discussion.

Minilectures

Some minilectures will be given in class, with handouts and interactive participation opportunities. Online Minilectures are 30-45 minute presentations related to the day's entrepreneurial strategy topics. They use a variety of online technologies including recorded Microsoft PowerPoint, WebEx, and Google Hangouts on Air. These Minilectures will occasionally be referred to in class and you may find them useful for your final presentations.

Final Presentations

There is no final exam for EC 491. In lieu of a final exam, each group of 4-6 students will prepare a recorded audiovisual presentation of a strategic analysis of an entrepreneurial situation or opportunity, *emphasizing the principles covered in EC 491*, to be submitted during the exam period. Your group is responsible for 30 minutes of presentation on such a EC 491 related topic. A *10-slide* PowerPoint presentation deck and *one* multi-layer spreadsheet are required as supporting documents and analysis; other materials may be provided but are not required (or necessarily encouraged.) All students must affiliate with at least one team. There is no requirement that all team members actively present in the final recording; please plan ahead, cater to your team's strengths, and make the best presentation that you can.

After submitting the presentation, all team members will be asked to report, anonymously, on the performance of each team member during the entire project; the evaluation choices range from "Superior" to "Adequate" to "Inadequate." If *four or more* of your team members (including yourself) report that you contributed at a "Superior" level, your final *course* grade will be increased by *one* grade increment (e.g., 3.5 to 4.0). If *two or more* of your team members report that you did not make at least an "adequate" level of contribution to the project, your final *course* grade will be reduced by *one* grade increment (e.g., 3.5 to 3.0). [Feel free to rate yourself "Superior"; the system's set up that way.] Please note that there is no forced curve to the class grading; it is theoretically possible for all teams to submit excellent projects, all report Superior performance among their peers, and all receive the top grade.

A Final Note

Entrepreneurship is an inherently unforgiving discipline: there is no special set of "easy" entrepreneurial opportunities reserved for students whose other commitments divert their time and effort, who aren't as driven as their colleagues, or who simply don't want a traditional job. I promise not to be offended if you decide to drop (or merely audit) the class because you believe that EC 491 will be too much work, that its requirements will not jibe with your other commitments, or that your interest in Innovation and Entrepreneurship is not as strong as you initially anticipated. In return, I expect your active attention and involvement in the course – an investment that will pay off both in 2018 and later.

That said, once you are immersed in EC 491, I promise that I will do my best to make you forget about the grading structure and to concentrate on the process of learning about Innovation and Entrepreneurship. The course is designed to be highly rewarding to future entrepreneurs (as well as immense amounts of fun) if taken seriously; if you don't find it fun, I would strongly advise you not to quit your day job (even if you hate your boss and have plenty of starting capital.) I hope that you will find that the course's excitement motivates you strongly to devote your best efforts to the readings, class discussion, and group project – if so, the grade will follow.

Course Syllabus

PART 1: INNOVATION

Week 1 (1/8, 1/10):

Course Introduction and A Brief History of Innovation

The Links among Basic Science, Invention, Innovation, and Entrepreneurship in Light and Ice

Week 2: (1/15, 1/17)

NO CLASS JANUARY 15 (MLK Holiday)

Product Innovation and Its Payoffs

Week 3: (1/22, 1/24)

Process Innovation and Its Payoffs

Comparing Payoffs from Process Innovation vs. Product Innovations

Week 4: (1/29, 1/31)

Exploring BRDIS Data and Patterns of R&D in US Industry

The Timeline of Innovation: Taking Risks and Getting Paid

Week 5: (2/5, 2/7)

Private Investment in Value Enhancement: Theory and Evidence

Public Investment in Value Enhancement: Theory and Evidence

Week 6: (2/12, 2/14)

Private Investment in Cost Reduction: Theory and Evidence

Public Investment in Cost Reduction: Theory and Evidence

Week 7 (2/19, 2/21):

Non-Value, Non-Cost Motivations for Private Investment in R&D

Non-Value, Non-Cost Motivations for Public Investment in R&D

Week 8 (2/26, 2/28)

Concept Review and Integration

Midterm Exam

SPRING BREAK – no class 3/6, 3/8

PART 2: ENTREPRENEURSHIP

Week 9: (3/12, 3/14)

Peter Drucker's Classic Four Entrepreneurial Strategies
Classic Mistakes in Entrepreneurship

Week 10: (3/19, 3/21)

Entrants' Information and Agility Advantages
Guest Speaker: Insights on Financing New Ventures

Week 11: (3/26, 3/28)

Entrepreneurial Strategy Execution
Discovery-Driven Planning

Week 12: (4/2, 4/4)

Guest Speaker, Topic TBD
Guest Speaker, Topic TBD

Week 13: (4/9, 4/11)

The DuPont System and the Value of Marginal Improvements
Applying the DuPont system to small growing businesses

Week 14: (4/16, 4/18)

Advanced Competitive Analysis and Strategic Actions

Week 15: (4/23, 4/25)

Strategic Career Management for Would-Be Entrepreneurs
Workshop on Timing of Entrepreneurial Entry