

ECON 483: Economics of Innovation and Technology

University of Illinois at Urbana-Champaign
College of Liberal Arts & Sciences
Department of Economics

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302 Architecture

Spring 2016
Monday and Wednesday: 11:00AM - 12:20AM

Communication:

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Office Hours: Monday 4:00pm-5:00pm (or by appointment)

Catalog Description:

Examines the economic factors shaping innovation and technical change since the industrial revolution with emphasis on the economic relationship between science and technology and the role of government in technical change.

Credit: 3 undergraduate hours. 2 or 4 graduate hours.

Prerequisite: [ECON 102](#) or equivalent; [ECON 302](#) or consent of instructor.

Course Description:

This course analyzes economics incentives to innovate and create new technology. Starting from a historical perspective, the course then focuses on how market power, rewards to innovation, spillovers, and network effects, impact the intensity and direction of inventive activity. The primary tool to analyze firms, consumers and government behavior is game theory. Registered students should be familiar with analysis of static games (Nash equilibrium) as well as dynamic equilibrium concepts (Subgame Perfect equilibrium). Additionally, knowledge of basic calculus (functions, derivatives, integrals) is required for the class. Throughout the course, students will be presented with theoretical models to understand innovation and technology from an economic perspective. At the end of the course, students are expected to be able to analyze innovation-related topics with a solid economic background.

References (Optional):

There is no required textbook. Two good references to complement the class lectures are:

Innovation and Incentives. Suzanne Scotchmer, MIT Press (2006).

The Theory of Industrial Organization. Jean Tirole. MIT Press (1988)

Evaluations:

(20%) Midterm Exam 1 (March 2nd, 2016)

(20%) Midterm Exam 2 (April 6th, 2016)

(30%) Report and Presentation of an Innovation Topic (April 25th –May 4th, 2016)

(30%) Final Exam (TBA)

The course evaluation will be based on two midterm exams, a written report and a presentation, and a final exam. The midterm and final exams will test your understanding of the material as well as your ability to solve variation of models studied in class. The final exam will be comprehensive and it will evaluate all the material covered in the class.

The Report and Presentation of an Innovation Topic has to be in groups (minimum 2 and maximum 4). Your group will be responsible for finding the topic, which must be related to innovation and technology. I suggest reading the newspapers, magazines, innovation blogs, etc. Apart from documenting facts, the report must identify an underlying economic problem and present an analysis using the economic tools learnt in class. Specific details about the extent of the report and presentations will be provided during lectures.

The maximum score of each evaluation will be 100 points. To calculate your final score, compute the weighted average of your evaluations.

$$\text{Final Score} = 0.2 * \text{Midterm1} + 0.2 * \text{Midterm2} + 0.3 * \text{Report \& Presentation} + 0.3 * \text{Final}$$

Then, compare that final score to the Plus/Minus Grade Cutoffs below:

Plus/Minus Grade Cutoffs

A+ ≥ 97	B+ ≥ 87	C+ ≥ 77	D+ ≥ 67	60 > F
97 > A ≥ 94	87 > B ≥ 84	77 > C ≥ 74	67 > D ≥ 64	
94 > A- ≥ 90	84 > B- ≥ 80	74 > C- ≥ 70	64 > D- ≥ 60	

Academic Integrity:

“The University has the responsibility for maintaining academic integrity so as to protect the quality of education and research on our campus and to protect those who depend upon our integrity.

Expectations of Students. It is the responsibility of each student to refrain from infractions of academic integrity, from conduct that may lead to suspicion of such infractions, and from conduct that aids others in such infractions. Students have been given notice of this Part by virtue of its publication. Regardless of whether a student has actually read this Part, a student is charged with knowledge of it. Ignorance is not a defense.”

The University's full academic integrity policy is available at:
http://studentcode.illinois.edu/article1_part4_1-401.html

Final Exam Conflict Policy:

From the University's final exam policy:

- Any student having more than two consecutive final examinations is entitled to rescheduling as follows if he or she takes the following action no later than the last day of classes:
 - The student must investigate whether a conflict examination is being held at another time for any of the examinations involved.
 - If a conflict examination has been scheduled for any of the courses, the student must take one or more of these conflict examinations. If conflict examinations are offered for more than one course, the student must take the conflict for the course that has the largest number of students.
 - If no conflict examinations have been scheduled, the student must contact the instructor of the course having the largest number of students. The contact must be made no later than the last day of classes, and that instructor must provide a makeup examination.
 - Normally in a semester several combined-sections, conflict, and noncombined examinations are given at the same time. As a guide to resolving conflicts, an order of priority has been established within each examination period, and a student should resolve a conflict using the published examination schedules and the following priority guidelines.
 - National and state professional examinations (e.g., CPA, actuarial science, Architecture Registration Examination) take priority over campus final examinations. An instructor must offer a conflict examination to a student scheduled to take a national or state professional examination and a campus final examination at the same time.
 - A noncombined course examination has precedence over any combined-sections or conflict examination.
 - A department offering a combined-sections final examination must provide a conflict examination if required to accommodate student conflicts.

The University's final exam policy is available at:
http://studentcode.illinois.edu/article3_part2_3-201.html

Drop without a grade:

Deadline to Drop without a grade of W:

Emergency Response Recommendations:

The university maintains guidelines for emergency responses. A list of recommendations when to evacuate and when to find shelter are available at:

http://illinois.edu/cms/2251/general_emergency_response_recommendations_8_16_13_final.docx

Floor plans for specific buildings are available at:

<http://police.illinois.edu/emergencyplanning/floorplans/>

Statement on Accommodations:

To obtain disability-related academic adjustments and/or auxiliary aids, students with disabilities must contact the course instructor and the Disability Resources Educational Services (DRES) as soon as possible. To contact DRES you may visit 1207 S. Oak Street, Champaign, call 333-4603 (V/TTY), or email a message to disability@uiuc.edu.

Topics:

1. Introduction: Innovation and Technological Advances

What is technology and innovation?

2. Historical Developments and Institutions

Why are we in the technological stage we are?

3. Innovation and Economic Growth

Why does innovation matter?

4. Ideas, Knowledge, and Intellectual Property

The economics of Ideas and problems of appropriation
(Patents; copyrights; open source; trade secrets, trademarks)

5. Optimal Design of Innovation Policies

How long should a patent last?

6. Litigation and Enforcement

How can firms enforce their IP? Strategic enforcement of patents. Patent trolls.

7. Innovation and Market Power

Do firms need market power to innovate?

8. Innovation and Market Structure

Does more competition encourage or discourage innovation?

9. Strategic Investment in R&D

Patent races; Strategic management of innovation.

10. Cumulative Innovations

How does the cumulative nature of technology affect incentives to innovate?

11. Knowledge Spillovers

If a firm R&D investment benefit rivals, how do incentives to innovate change?

12. Licensing and Joint Ventures

What to do with an invention? When do firms prefer collaboration over competition?

13. Technology Adoption and Technology Diffusion

Who adopts new technology? How does technology diffuse? Network Externalities