Simon Fraser University
Political Science Departments
TECHNOLOGY and INNOVATION POLICY
(POL 457W/855)
Updated: Sept. 6, 2018

Fall 2018 Prof. Hira
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Description and Schedule

Description

Objectives

A writing-intensive, project-based course that introduces students to contemporary issues of science, technology, and innovation policy from a comparative international perspective of state and firm interactions. The course is interdisciplinary in its approach, reviewing material from political science, development, economics, and business. Begins with an historical and conceptual introduction to innovations and their role in economic growth and development. The second part introduces classic and contemporary works that seek to explain innovation and when, how, and why it occurs. The third part analyzes cases of technology development and failure from around the world. Students will be guided through a case or issue study throughout the course, giving them experience at creating and presenting original research relevant to business, economics, and policy resulting in a solid research paper writing sample. Guest speakers share their real life career experiences.

Required Books

This is an upper level course, so students should be prepared to work through complex material. Materials are available through the Canvas website.

Assignments

The keys to success in any course for both the professor and student are thorough preparation and active participation. Students must not only attend every session, but also engage in an in depth discussion of the topic.

Students will be graded upon participation, examinations, and writing assignments. The assignments are the following:

1- Thorough preparation and active participation in every class. Students should make notes from the readings and come prepared to discuss them in class. The powerpoint slides and other materials, avail. from Canvas, will be a good guide to the topics of the lecture and discussion for each class. **Only verifiable doctor's notes will excuse absences from class or late penalties for assignments.**
2- At the end of each slide presentation, there will be short exercises that will guide class discussion. Instructions will be given in the prior week, and may require brief preparation outside of class.
3- A research policy brief of approximately 15 pages that examines an issue or case related to innovation policy. With adequate effort, this can become a professional quality writing sample. Students will present their findings to the class at the end of

the course. The professor will give instructions for each stage and be available for consultation throughout the process.

Suggested topics: look into the biography of an inventor; investigate how a product was invented and developed; examine a country or region's innovation policies; evaluate a current set of policies around innovation across regions; investigate and evaluate an innovative company. These will be discussed in depth in the first class. Think about choosing a topic in an area where you might want to work in the future, such as clean energy or mass transportation or health care.

Students taking the course for graduate credit will have to add a theoretical framework or prepare a proposal for funding or future research. Details and examples will be given.

Grading

The assignments will be graded proportionally as follows:

-participation, includes timely attendance, discussion, and participation in exercises 10%
-quizzes on readings, beginning of every class, 10%
-peer review exercises, 5%
-debate preparation and participation, 10%
-research paper, 65%, including

detailed proposal plan	10%
literature review	10%
outline of paper	5%
rough draft (polished finished product)	20%
final paper with revisions memo	10%
10 minute presentation to class	10%

Assignments are due promptly at the beginning of class. There will be an increasing penalty for any work that is late. Pls. see my website (listed at the top) for grading philosophy, lecture slides and suggestions on reading and writing that you can download. I am generally willing to read and discuss drafts with at least one week's notice.

Plagiarism

-Plagiarism, or the use or ascription of someone else's work as your own, is a serious offence. For university policies, please see http://www.sfu.ca/policies/Students/index.html and http://students.sfu.ca/academicintegrity

Tips on the Assignment

For each stage of the assignment, you will have detailed instructions and examples. However, this is your project and most of the outcome depends upon how much effort you put into it. You should make sure that you are working well ahead of assignment due dates so that you can get feedback along the way.

Office Hours I am generally available 8-3 M-F for you to drop in, except for teaching and meeting times. You are welcome to consult by e-mail or set up an appointment to ensure you

catch me. I will set up a class e-mail list.

Schedule

The schedule is planned by weeks. Readings should be done prior to each class.

I. Introduction to Course (Sep. 5)
-About the Professor, the students, and the course;
-Lecture: Introduction to Technology Policy; Technology and Economic Growth
W Introduction to Research Project Templates and examples of previous papers
W Quick Write and Peer Review- What are your initial thoughts about what would be some appropriate topics; what is a reasonable scope, and what is your assessment of the feasibilities of each?
W Structure of Academic Writing
Assignment for next week: Bring a short 1-2 page summary of the topic you intend to pursue, for peer review and for my feedback. Use the course webpage prepared by Librarian Mike McIntosh to get started on your research: https://www.lib.sfu.ca/help/research-assistance/subject/political-science/pol457

II. Importance of Technology to Economic Growth (Sep. 12)
Lecture- Schumpeter and Vernon on innovations cycles and global location of production
Readings: -Bart Verspagen, "Innovation and Economic Growth," pp.487-513 in Jan Fagerberg, David C. Mowery and Richard R. Nelson, *The Oxford Handbook of Innovation*, NY: Oxford U Press, 2005 available on-line through library catalogue and HD 53 094 2005
-Richard G. Lipsey, Kenneth I. Carlaw and Clifford Bekar. *Economic transformations: general purpose technologies and long-term economic growth*, pp. 1-15 & 25-49 NY: Oxford U. Press, 2005, available on-line through library catalogue and HC 79 T4 L57 2005
-Bring copy of Schumpeter and Vernon to class
W Peer Review Exercise- on Topic Choice, Scope, and Feasibility
W Walkthrough of preliminary proposal plan
In Class Exercise: What empirical evidence is there for a clear relationship between economic growth and technological development? What would you suggest as possible causal relationships?
W Librarian Mike McIntosh on how to conduct primary research for your topic, 1230-1300.

III. Schumpeter and Vernon- Classic Innovation Theory (Sep. 19)
Lecture: Diffusion of Innovation
Readings: Joseph Schumpeter, *Business Cycles*: *A Theoretical, Historical, and Statistical Analysis of the Capitalist Process*, NY: McGraw-Hill, 1964 (written in 1939), pp. 59-83 & 108-115, HB 3711 S392
-Vernon, R., 1966. International investment and international trade in the product cycle. Q J Econ 80, 190–207.
W *In Class Exercise:* Bring a copy of your preliminary proposal plan for in class peer review

W *In Class Exercise:* What are the elements of a good analytical framework? Group exercise using this week's readings.
Site Visit: Finger Food Studios, VR Laboratory, Nick Facey, Director of Business Strategy, 11:15-13:15. *Need to fill out NDA.

IV. Technology Diffusion (Sep. 26)
Lecture: National Innovation Systems, Triple Helix, and Global Fragmentation approaches
Readings: -Richard Lipsey, Technology and Globalization, working paper, will be sent.
-Everett M. Rogers, *Diffusion of Innovations*, 5th ed. Toronto: Free Press, pp.11-31, 210-18, 337-62.
Assignment due: preliminary proposal and annotated bibliography
W What is Required for a Literature Review, with walkthrough examples

V. National Innovation Systems Approach (Oct. 3)
Lecture: Measurements of Science and Technology
Readings:
-Richard R. Nelson, "Capitalism as an Engine of Progress," pp.52-83 in Nelson, *The Sources of Economic Growth*. Cambridge: Harvard U Press, HD 75 N45 1996 (3)
-Elias G. Carayannis and David F. J. Campbell, A "Mode 3" Systems Approach for Knowledge Creation, Diffusion, and Use: Towards a Twenty-First-Century Fractal Innovation Ecosystem," 71-111 in Carayannis and Christopher Ziemnowicz, *Rediscovering Schumpeter*, NY: palgrave macmillan, 2007, HC 79 T4 R4255 2007 (4)
W Discussion of preliminary proposal; group exercise on how to improve proposals
W *In Class Exercise:* Identifying and structuring paradigms for a Literature review, group exercise
Guest Speaker: Ian Neville, City of Vancouver, Green Strategy, 12:30-13:15

VI. Measurements of Science and Technology Performance (Oct. 10)
Lecture: Firm Competitiveness and Clusters
-Lea Velho, "Science and Technology in Latin America and the Caribbean: An Overview," UNU Feb 2004, will be sent
-OECD, *Science, Technology, and Industry Scoreboard*, latest free on-line edition avail. through library database (link will be sent)
-Hira, Learning from the Tigers, article will be sent
In Class Exercise: How can we measure s & t performance- example Mexico. **Excel primer**
Assignment: Bring copy of your literature review for peer review next week
Site Visit: Vivian Chan, Eyexpo Technology, 11:30-12:30

VII. How Firms Succeed (Oct. 17)
Lecture: Innovation in the South
Readings: -Michael E Porter, "The Five Competitive Forces that Shape Strategy" and "The Competitive Advantage of Nations," pp.3-35 & 172- 211 in *On Competition*, Boston: Harvard Business Review, HF 1414 P67 2008 (5)

-Sandor Boyson and Chaodong Han, 2008. "Eras of enterprise globalization: from vertical integration to virtualization and beyond," 26-57 in Juan J. Palacios, *Multinational Corporations and the Emerging Network Economy in Asia and the Pacific*, NY: Routledge, HD 62.4 M838 2008 (6).
-Constantine Markides, "Racing to be Second: Innovation through Imitation," 211-221 in Julian Birkinshaw, et. al, *The Future of the Multinational Company*, West Sussex: Wiley, HD 2755.5 F865 2003 (7).
-Seishi Kimura, Changing Context of Firm-based Late Industrialization in the Global Business Transformation, 33-78 in *The Challenges of Late Industrialization: The Global Economy and the Japanese Commercial Aircraft Industry*, NY: Palgrave macmillan, HF 1414 K515 2007 (8).
W Peer Review of Literature Reviews

VIII. Policy Challenges in a Development Context (Oct. 24)
Lecture: Downsides to Technology, incl. automation
Readings:
-Peter Evans, State Structures, Government-Business Relations, and Economic Transformation, 63-87, Sylvia Maxfield and Ben Ross Schneider, eds. *Business and the State in Developing Countries*. Ithaca: Cornell U. Press, HD 3616 D452 B87 1997 (9).
-William F. Maloney, "Missed Opportunities: Innovation and Resource-Based Growth in Latin America," *Economia*, Fall 2002, 111-65, available through library subscription.
-Linsu Kim, "Crisis construction and organizational learning: Capability building and catching up at Hyundai Motor," *Organizational Science* 9 (1998): 506-21 available through library subscription.
Assignment due: Literature review
W How to move from a literature review to an outline
Guest Speaker, Paul Kariya, Coastal First Nations- Great Bear Initiative Augmenting a traditional resource economy with New ventures: the case of Coastal First Nations in North-central BC

IX. Downsides to and Concerns about Technology and Automation (Oct. 31)
-Debate Instructions
-David Rotman, "How Technology is Destroying Jobs," (Review of work of Erik Brynjolfsson and Andrew McAfee) *MIT Technology Review*, June 12, 3013, freely avail. at http://www.technologyreview.com/featuredstory/515926/how-technology-is-destroying-jobs/
-D. Sarewtiz, 2004. How science makes environmental controversies worse. *Environmental Science & Policy.* 7, 5: 385-403.
-Fernando P. Carvalho. 2006. Agriculture, pesticides, food security and food safety. *Environmental Science & Policy.* 9: 685-92.
W Discussion of literature reviews
Guest Speaker, Dr. Andrew Wright, Founder and Executive Director, Willow Grove Foundation and Adjunct Professor, Pacific Water Research Centre

X. Debate on Technology Policy (Nov. 7)

Debate topic 1: Should the state have an active policy to favour certain firms or industries in cutting edge technologies? If so, what policies? If not, what should be the policy approach? Is the answer different for a developing country? Use concrete examples.
Debate topic 2: Are there significant negative aspects of technological progress? What kinds of policies can and should we use to mitigate or reverse them? Use concrete examples.
Assignment due: Outline for Paper
W Moving from Outline to Drafting the Paper
W Checklists for preparing your final paper
W Tips on Presenting a Research Paper

XI. **Field Trip** (Nov. 14)
W Rough Draft of Final Paper Due
Field Trip, Switch Materials, 11:15-12:30

XII. **Student Presentations I** (Nov. 21)
W Rough Draft with Comments returned

XIII. **Student Presentations II** (Nov. 28)
W Final Paper Due

AN IMPORTANT REMINDER:

Plagiarism involves using another author's words without attribution or otherwise presenting another person's work as one's own. It is a fraudulent and serious academic offence that will result in a severe academic penalty. Also, close paraphrasing of another author's work & self-plagiarism, including submitting the same, or substantively the same, work for academic evaluation more than once, are unacceptable practices that will result in a severe academic penalty.

The university policies on academic honesty are available at:
http://www.sfu.ca/policies/gazette/student.html

The Department of Political Science's interpretation of this policy can be found at:
http://www.sfu.ca/content/dam/sfu/politics/undergraduate%20docs/PLAGIARISM%20Policy%20-%20%20Pol%20Dept.%20Jan.pdf, and is available in hard copy upon request. All students are responsible for familiarising themselves with these policies.

A helpful SFU Library tutorial on plagiarism is at https://www.lib.sfu.ca/help/academic-integrity/plagiarism-tutorial

The DOs and DON'Ts of AVOIDING PLAGIARISM

Do not:

- submit an entire paper or part(s) of a paper or papers that has been written or researched by any other person(s);
- submit a paper as an assignment that has been bought from another person or from a 'paper mill' or essay service;
- submit a paper or other written assignment that has been submitted at another time or for a different course by yourself or any other student or former student;
- submit material that has been downloaded from a website, without acknowledging (using appropriate citation style) that you have done so;
- take someone else's idea(s) and represent it/them as your own;
- copy any text verbatim, or with only slight variation from the original text, without using quotation marks and documenting the source with proper citation style;
- do not closely paraphrase another's material; either paraphrase completely in your own words, or cite as a direct quotation using quotation marks (in either case, give full credit and details regarding authorship and location of the original material);

Do:

- learn how to cite material properly (there are many good guides on this, including the departmental one);
- use a recognized citation style (eg. APA, MLA, Chicago), according to instructions given by the course instructor, and be consistent in the use of the style throughout any single piece of written work;
- carefully read and make sure you understand the university's policy on academic honesty;
- ask the instructor of this course or other faculty members if you have any questions about plagiarism.