ISP 5XXX

Science & Technology Policy Analysis

Room – Meeting Time

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Office Address, Office Hours
Email, Phone

Syllabus, slides, grading rubrics, and other course materials will be made available on the teaching section of johnmclevey.com and on Blackboard / Learn.

COURSE DESCRIPTION

This graduate seminar is an introduction to the key problems, theories, and tools (including scenario analysis, systematic reviews, and evaluation metrics) in the interdisciplinary field of science and technology policy analysis. It is designed to provide essential training for policymakers, practitioners and researchers.

LEARNING OBJECTIVES

This course has two primary sets of learning objectives. First, by the end of the course students will be able to (**1.1**) describe the fundamental challenges of science for policy and policy for science, (**1.2**) characterize the challenges and opportunities of policies related to research funding, open science, and cultivating innovative collaboration networks. (**1.3**) Students will also be able to describe and compare the politics of copyrights and patents across countries.

The second set of objectives are skill-based. By the end of the course students will (**2.1**) have acquired essential skills for conducting science and technology policy analysis, including scenario analysis, systematic reviews, evaluation studies, and proper use of evaluation metrics. Finally, (**2.2**) students will have gained experience in writing with a policy audience in mind.

DELIVERABLES & EVALUATION

To do well in this course, you have to take the material seriously, consider it, and discuss it. If you have strongly held opinions, you should be willing to change your mind on the basis of empirical evidence, or rational and respectful argument. That said, you do not have to agree with

the readings, with what I say about them, or what others say about them. When you disagree, **be respectful**.

Given the learning objectives outlined above, your grade in this course will be based on the tasks described below.

Table 1: Overview of Course Deliverables

Deliverable	Due Date	Authorship	Value
Reading Memos	Depends on Reading Selected	Single	10%
Project Proposal, Outline, and Plan	TBA	Co-Authored	20%
Systematic Review	TBA	Co-Authored	30%
Co-Authored Article or White Paper	TBA	Co-Authored	40%

Reading Memos

Each person will write two reading memos on readings of their choice and share them with the class. Each memo should be roughly 300 words, and should not exceed 330 words. I expect them to be thoughtful, clear, and carefully edited. The memos should identify core points from the readings, offer any thoughts or reactions, and raise discussion questions for class. You are encouraged but not required to relate them to any personal experiences. In order to make sure that there are reading memos and student-submitted discussion questions for each class, students will sign up for specific readings at the start of the term.

Each memo is due the night before the class where we will discuss the readings you selected. These memos will be shared with the rest of the class, who may provide constructive and thoughtful comments. Commenting on the memos is not required, but it is a good way to contribute to class discussions. Disrespectful comments will not be tolerated. They will be as damaging to your participation grade as hostile behaviour in the classroom.

Collaborative Project – Proposal, Outline, and Plan; Systematic Review; Co-Authored Article or White Paper

The main deliverable for this course is a collaborative project with multiple parts, including: (1) a proposal, outline and project plan, (2) a systematic review, and (4) **either** a co-authored paper written in the style of an empirical journal article **or** a white paper / policy report. I will provide extensive guidance and templates for writing both types of papers.

Project topics should fit into one of the three major course themes. You will share your research articles or policy papers for everyone in the class to read and comment on. This collaborative project will help you learn important research and project management skills, and it will give you a chance to try your hand at research before you have to tackle a larger project.

The empirical articles or white papers must present and discuss relevant evidence in the form of a systematic review of existing literature. I will provide advice, guidelines, and supplementary readings on how to conduct a systematic review. *If you would prefer to write a different kind of paper, you must consult me as soon as possible*.

Co-authoring is very common in most academic disciplines and in the public, private, and non-profit sectors. Importantly, being a good co-author is a skill that can be acquired and perfected. We will discuss co-authoring skills and best practices throughout the semester.

Your paper should be roughly 7,000 words before references, have standard margins, and use a 12 pt font. Roughly 2/3 should be set aside for findings from the systematic review and a bigger picture discussion about intellectual and policy implications. Do not use a cover page. Put the title and your names in *alphabetical order* at the top of the first page. You are free to use any citation style you like, but you must use it consistently.

Submitting Work & Late Policy

You will submit all work electronically on Blackboard / Learn. Please do not give me hard copies of anything, under any circumstances. I will deduct 5 points a day for every day, or part of a day, that your work is late, including weekends. I will not make exceptions without a medical note.

REQUIRED BOOKS

- Paul Cairney (2016) *The Politics of Evidence-Based Policy Making*. Palgrave Macmillan.
- Shobita Parthasarathy (2017) *Patent Politics: Life Forms, Markets, and the Public Interest in the United States and Europe*. University of Chicago Press.

UNIVERSITY POLICIES & RESOURCES FOR STUDENTS

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SCHEDULE OF TOPICS & READINGS

Weekly Topics in Brief

The course is organized into 3 main parts. The first part (🧪+🔨, weeks 2-6) focuses on fundamental problems, concepts, and theories in science and technology policy. The second part (📊, weeks 7-9) focuses on specific tools used in science and technology policy analysis, including scenario analysis, systematic reviews, and evaluation metrics. Finally, the third part (©, weeks 10-12) is a primer on copyright and patent politics.

1. Introduction + Science and Democracy
2. (🧪+🔨) Policy for Science and Science for Policy
3. (🧪+🔨) Policy for Science and Science for Policy
4. (🧪+🔨) Research Funding and Incentive Structures
5. (🧪+🔨) Open Science: Challenges and Opportunities
6. (🧪+🔨) Policy Networks and Echo Chambers
7. (📊) Technically-Focused Policy Analysis, Scenario Analysis
8. (📊) Systematic Reviews and Meta-Analysis
9. (📊) Research Evaluation: Indicators and Metrics
10. (©) Copyright, Patent Politics, and Governance
11. (©) Copyright, Patent Politics, and Governance
12. (©) Copyright, Patent Politics, and Governance + Course Conclusion

Topics and Readings

Week 01, Jan 17 - Jan 21: Introduction + Science and Democracy

- Part 1 from Collins and Evans (2017) *Why Democracies Need Science*

Week 02, Jan 24 - Jan 28: Policy for Science and Science for Policy (+)

- Cairney (2016) pages 1-50 from *The Politics of Evidence-Based Policy Making*
- McLevey and Deschamps (Forthcoming) "The Sociology of Public Policy Formation and Implementation" (Note: focus on the section covering evidence, knowledge, and theories of the national and international origins of policy ideas)

Week 03, Jan 31 - Feb 04: Policy for Science and Science for Policy (+)

- Cairney (2016) pages 51-134 *The Politics of Evidence-Based Policy Making*
- *Recommended, not required*: Béland (2009) "Ideas, institutions, and policy change"

Week 04, Feb 07 - Feb 11: Research Funding and Institutional Logics (+)

- Sarewitz (2011) "Institutional ecology and the social outcomes of scientific research"
- Lane et al. (2015) "New linked data on research investments: Scientific workforce, productivity, and public value"
- *Recommended, not required*: McLevey (2014) "Think Tanks, Funding, and the Politics of Policy Knowledge in Canada"
- *Recommended, not required*: Bellotti (2012) "Getting funded: Multi-level network of physicists in Italy"

Week 05, Feb 14 - Feb 18: Open Science: Challenges and Opportunities (+)

- Selections from Suber (2012) *Open Access*
- EU Commission Report on Open Science
- *Recommended but not required*: Lavis et al. (2003) "How Can Research Organizations More Effectively Transfer Research Knowledge to Decision Makers?"

Week 06, Feb 21 - Feb 25: Policy Networks, Attitudes, and Echo Chambers (+)

- Knoke (2011) "Policy Networks"
- Jasny, Waggle, and Fisher (2015) "An empirical examination of echo chambers in US climate policy networks"
- Allum et al. (2008) "Science Knowledge and attitudes across cultures: A meta-analysis"

Week 07, Feb 28 - Mar 04: Technically-Focused Policy Analysis, Scenario Analysis ( )

- Morgan (2011) "Technically-Focused Policy Analysis"
- Lloyd and Schweizer (2014) "Objectivity and a Comparison of Methodological Scenario Approaches for Climate Change Research"

Week 08, Mar 07 - Mar 11: Systematic Reviews and Meta-Analysis (📊)

- Selections from Higgins and Green (2008) *Cochrane Handbook for Systematic Reviews of Interventions*
- *Recommended but not required*: McLevey and McIlroy-Young (2017) "Introducing *metaknowledge* for computational research in information science, network analysis, and science of science"

Week 09, Mar 14 - Mar 18: Research Evaluation: Indicators and Metrics (📊)

- Hicks et al. (2015) "The Leiden Manifesto for research metrics: Use these ten principles to guide research evaluation"
- Gingras (2014) "Criteria for Evaluating Indicators"
- Cassidy R. Sugimoto and Blaise Cronin "Accounting for Science"

Week 10, Mar 21 - Mar 25: Copyright, Patent Politics, and Governance (🔨)

- Parthasarathy (2017) Ch. 1-2 of *Patent Politics: Life Forms, Markets, and the Public Interest in the United States and Europe*

Week 11, Mar 28 - Apr 01: Copyright, Patent Politics, and Governance (🔨)

- Parthasarathy (2017) Ch. 3-4 of *Patent Politics: Life Forms, Markets, and the Public Interest in the United States and Europe*

Week 12, Apr 04 - Apr 08: Copyright, Patent Politics, and Governance + Conclusion (🔨)

- Parthasarathy (2017) Ch. 5-Conclusion of *Patent Politics: Life Forms, Markets, and the Public Interest in the United States and Europe*

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Bellotti, Elisa. 2012. "Getting Funded: Multi-Level Network of Physicists in Italy." *Social Networks* 34(2): 215–29.

Béland, Daniel. 2009. "Ideas, Institutions, and Policy Change." *Journal of European Public Policy* 16(5): 701–18.

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Collins, Harry, and Rob Evans. 2017. *Why Democracies Need Science*. Polity Press.

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Lane, Julia, Jason Owen-Smith, Rebecca Rosen, and Bruce Weinberg. 2015. "New Linked Data on Research Investments: Scientific Workforce, Productivity, and Public Value." *Research Policy* 44(9): 1659–71.

Lavis, John, Dave Robertson, Jennifer Woodside, Christopher McLeod, Julia Abelson, and the Knowledge Transfer Study Group. 2003. "How Can Research Organizations More Effectively Transfer Research Knowledge to Decision Makers?" *Milbank Quarterly*.

Lloyd, Elisabeth, and Vanessa Schweizer. 2014. "Objectivity and a Comparison of Methodological Scenario Approaches for Climate Change Research." *Synthese* 191(10): 2049–88.

McLevey, John. 2014. "Think Tanks, Funding, and the Politics of Policy Knowledge in Canada." *Canadian Review of Sociology/Revue canadienne de sociologie* 51(1): 54–75.

McLevey, John, and Ryan Deschamps. Forthcoming. "The Sociology of Public Policy Formation and Implementation." In *SAGE Handbook of Political Sociology*, eds. William Outhwaite and Stephen Turner. SAGE.

McLevey, John, and Reid McIlroy-Young. 2017. "Introducing *Metaknowledge*: Software for Computational Research in Information Science, Network Analysis, and Science of Science." *Journal of Informetrics*.

Morgan, Granger. 2011. "Technically Focused Policy Analysis." In *The Science of Science Policy: A Handbook*, eds. Kaye Husbands-Fealing, Julia Lane, John Marburger III, and Stephanie Shipp. Stanford University Press.

Parthasarathy, Shobita. 2017. *Patent Politics: Life Forms, Markets, and the Public Interest in the United States and Europe*. University of Chicago Press.

Sarewitz, Daniel. 2011. "Institutional Ecology and the Social Outcomes of Scientific Research." In *The Science of Science Policy: A Handbook*, eds. Kaye Husbands-Fealing, Julia Lane, John Marburger III, and Stephanie Shipp., 337–48.

Suber, Peter. 2012. *Open Access*. Cambridge: MIT Press.