RES 507 Human and Technological Systems  
GPP 542 Science and Technology Policy  
Syllabus Outline

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<tr>
<th>Instructor</th>
<th>Office</th>
<th>Office Hours</th>
<th>Email</th>
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<tbody>
<tr>
<td>Hadi Dowlatabadi</td>
<td>AERL 422</td>
<td>by appointment</td>
<td><a href="mailto:hadi.d@ubc.ca">hadi.d@ubc.ca</a></td>
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<td><a href="mailto:hadi.teaching@gmail.com">hadi.teaching@gmail.com</a></td>
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Class Time and Place:  
9 am to 12 noon, Thursdays, AERL 107, 2202 Main Mall, UBC-V Campus.

Course Overview  
This course introduces students to the role and influence of science and technology in society, and its relationship to public policy, human development and the environment. The influence of science and technology on public policy is bidirectional. Science and technology (S&T) is influenced by policy decisions (policy for science) and in turn influences public policy (science for policy). The course introduces students to this bidirectional interaction. The approach is multidisciplinary, drawing upon literature in a wide range of fields including: economics of technological change, philosophy of science, environmental science and engineering, psychology, sociology and history of technology. We will also rely upon the extensive literature written by scientists, engineers and policy analysts in their role as policy observers, advisors and advocates. While this literature tends to draw heavily on the North American and European cases, the course will strive to incorporate concerns and cases in the developing world, and problems of poverty and inequity worldwide.

Learning Outcomes:

By the end of this course, students should be able to:

- Demonstrate broad understanding of the relationships between science, technology and society;
- Articulate the differences and interconnections between science and technology;
- Describe sources of technological change and their influence on the economy, on society and the local and global environment;
- Explain how government policy, including patent protection and government funded R&D, influences the development of new technologies (including ‘green’ ones);
- Explain how science-policy advisory systems operate, how technology assessment is conducted, and how it can influence public policy;
- Articulate the basic concepts of public perception of science;
- Explain how social groups actively bring about or resist technological change;
- Apply course concepts and tools to analyze ‘real-world’ science-policy controversies.
Course Format:
The course is organized to maximize opportunities for mutual learning and feedback. Each week, there are assigned readings to prepare for the discussions of the week ahead. Subsequent to the discussion, you are expected to write up a one-page reflection on the readings and discussions that ensued. These are intended to help you develop the skills and background knowledge necessary to succeeding in understanding and shaping science-technology & policy either as a professional or an active citizen.

Course Requirements
This course will require that students apply concepts from a variety of disciplines. A background in a scientific or technical field is useful but not necessary. Students are expected to attend each class session, to prepare for each session by completing the weekly readings, and to participate actively and constructively in class discussions.

Evaluation Criteria and Grading
- The presentation and short reflections will allow students to demonstrate their understanding of course concepts and major debates within the literature.
- The policy briefs will enable students to synthesize key ideas in a succinct manner and to communicate them in a format a policymaker might demand.
- The Group Case study will allow integration of your emerging knowledge in addressing important “real-world” policy problems.

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<tr>
<th>Assignments</th>
<th>Due Dates</th>
<th>% of final grade</th>
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<tr>
<td>Short Reflections</td>
<td>Weekly</td>
<td>20%</td>
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<tr>
<td>In-class discussions &amp; activities</td>
<td>Weekly</td>
<td>20%</td>
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<tr>
<td>Presentation of a paper</td>
<td>Random week</td>
<td>5%</td>
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<td>Policy brief (individual effort)</td>
<td>Due Oct 12th &amp; Nov 9th</td>
<td>20%</td>
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<tr>
<td>Case study Presentation (group effort)</td>
<td>Due Dec 7th</td>
<td>35%</td>
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Short Reflections (20%)
The readings for each week will prepare you for discussions of the class that follows. After that class you can reflect on what you have learned. These should be short and pithy (no more than a page). These will be reviewed to provide feedback to you and to me. The former helps me track your progress. The latter helps me refine the course content and presentation to better match the audience.

Presentation of readings (5% per paper)
The class will be asked to read two or three papers in preparation for class each week. Each student will be asked to present a paper to their peers. This involves presenting the main points of the paper and any critiques they may have and leading a discussion by their peers of its content.
In-Class Activities – 20%
- Students are expected to have thoroughly read the assigned readings and prepared to participate actively in class discussions, debates and workshops.
- Students will be providing feedback on one another’s policy briefs.
- Students will be working together on their join projects.

These and many other in class activities demands your total engagement. The more you engage, the more you can take away from the course.

Policy brief – 20%
A policy brief is a short document (~1500 words) that takes various forms. It can present the findings and recommendations of a research project to a non-specialist audience, it can be a medium for exploring an issue and distilling lessons learned from the research, or it can be vehicle for providing policy advice. You will be asked to write two policy briefs on topics of your choice. One policy brief should be aimed at a public sector decision-maker. The other policy brief should be aimed at a private sector decision-maker. You can find examples and suggestions for policy briefs here:

2. [http://www.ids.ac.uk/publication/achieving-diverse-development-goals-how-can-different-goals-be-pursued-together](http://www.ids.ac.uk/publication/achieving-diverse-development-goals-how-can-different-goals-be-pursued-together)

Case Study (Total 35%)
Students will work in groups on a selected science and technology topic to apply and integrate the tools and knowledge acquired through the term. The projects will be judged on:

a) Qualitative description (30%):
   i. The origin of the issue (its history etc.) and potential analogues.
   ii. Responsibility for its emergence (if there is one).
   iii. Distributional aspects of its costs and benefits.
   iv. Quality of knowledge about the problem, its causes and potential solutions.
   v. Institutions, laws and customs that may be relevant.

b) Data/evidence (20%):
   i. What evidence or empirical material supports the concerns?
   ii. What are the uncertainties?

c) Analysis of options and policy advice (35%):
   i. What are the short to long-term strategies/policies for addressing this challenge?
   ii. What forms would appropriate policies take?

d) Overall presentation quality: (15%)
   i. How well articulated, integrated and readable is your report?
   ii. Have you made good use of high quality visuals?
   iii. Would your neighbour be persuaded by this report?

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1 This is the IDRC’s (now Global Affairs Canada) definition.
## Course Schedule

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<tr>
<th>Week</th>
<th>9-11:50</th>
<th>Readings</th>
<th>Assignments</th>
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<tr>
<td>1</td>
<td>Introductions and course expectations. Are Policy &amp; Science conjoined twins or isolated realms? (Socrates, Seneca, Hypatia, Pythagoras, etc. were murdered for their political stands)</td>
<td>Jasanoff (2003, 1987); Handbook of Policy Analysis</td>
<td>Weeks 1-11: write a 1-page reflection on the readings and class discussion.</td>
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<td>2</td>
<td>Science-policy advisory processes and institutions. Fehr &amp; Fischbacher (2004); C&amp;H Boesch (1990); Young (2007)</td>
<td>Schmidt et al. 2012</td>
<td>Also, develop your policy briefings they are due Oct 12th and Nov 9th</td>
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<td>3</td>
<td>Intelligence, technology &amp; emergence of social norms Clark (1981); Slovic (1987); Wilson &amp; Crouch (1987); Ames et al (1987); Russell &amp; Gruber (1987)</td>
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<td>Also, develop your group Case Study and prepare your final report for submission by Dec 7th.</td>
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<td>4</td>
<td>Risks: objective, exceptions, perceptions and governance Gelderblom et al. (2013); Irwin (1991); Prager (1961)</td>
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<td>5</td>
<td>Privilege, priority, patents and monopolies - development &amp; commerce Lele &amp; Goldsmith (1989); Pignali (2012); Trouiller et al (2002); Kammen &amp; Dove (1998)</td>
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<td>6</td>
<td>Science Based Development (INCLEN, Green Revolution, ...), Effective demand &amp; R&amp;D spending Kahan et al (2012); Lave (1997); Pidgeon &amp; Fischhoff (2011).</td>
<td>No readings this week – prepare your project previews</td>
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<td>7</td>
<td>Policy &amp; uncertainty, Exceptional circumstance and frontiers of technical progress No readings this week – prepare your project previews</td>
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<td>9</td>
<td>The scientific process of court of public opinion Atman et al. (1994a,b); Wong-Parodi et al. (2011).</td>
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<td>10</td>
<td>Bridging the gap between public-expert understanding mental models of social marketing Galor &amp; Neil (2000); Henrich (2000); Konow (2000); Rezaei &amp; Dowlat Abadi (2015); Hayakawa et al. (2000)</td>
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<td>11</td>
<td>Cultural dimensions of policy</td>
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<td>12</td>
<td>Emerging issues: Plastics &amp; CRISPER</td>
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<td>13</td>
<td>Emerging issues: AI &amp; ET</td>
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Course readings are organized by week in the shared workspace.

Video Material:
AI/Robotics: Why We Will Rely on Robots – Rodney Brooks
Science and Trust: Naomi Oreskes.
https://www.youtube.com/watch?v=RxyQNEVOEIU
End of Growth: Robert Gordon.
https://www.youtube.com/watch?v=gDmX0fG0so
4
Has innovation peaked: Joel Mokyr.
https://www.youtube.com/watch?v=h5x3rdD0tSU
The Long Tail: Chris Anderson
http://www.ted.com/talks/chris_anderson_of_wired_on_tech_s_long_tail?language=en
Being Mortal: Love and Cancer at 27 [Frontline]

Academic Integrity
The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging other sources of information or ideas with attribution. Students should not cheat, copy, or mislead others about their work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise. These entail serious consequences and imposition of harsh sanctions. For example, incidences of plagiarism or cheating will result in a mark of zero on the assignment or exam and more serious consequences may apply if the matter is referred to the President’s Advisory Committee on Student Discipline. Details at: http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,54,111,0.

Access & Diversity:
The university strives to create an inclusive living and learning environment for all students. The university accommodates students with disabilities who have registered with the Access & Diversity unit: [http://www.students.ubc.ca/access/drc.cfm].

Religious Accommodation:
The university accommodates students whose religious obligations conflict with attendance, submitting assignments, or completing scheduled tests and examinations. Students should let their instructor know in the first week of class, if they will require any accommodation on these grounds. Students who plan to be absent for varsity athletics, family obligations, or other similar commitments, cannot assume they will be accommodated, and should discuss their commitments with the instructor before the course drop date. UBC policy on Religious Holidays: http://www.universitycounsel.ubc.ca/policies/policy65.pdf

UBC Statement on Respectful Environment for Students, Faculty and Staff
The University of British Columbia envisions a climate in which students, faculty and staff are provided with the best possible conditions for learning, including an environment that is dedicated to excellence, equity and mutual respect. UBC strives to realize this vision by establishing practices that respect the dignity of individuals, free from harmful behaviours such as bullying and harassment.