Royal Military College of Canada (Kingston)
POE372 - Science, Technology, Politics, Society and the Environment (0.5 credit)
POE374 - Science, Technology and Public Policy (1 credit)
Fall 2020

Professor: David Last
Department of Political Science and Economics
Email: last-d@rmc.ca
Website: www.davidmlast.org
Office: Girouard 406
Phone: +1(613)532-3002 (voice, text, WhatsApp, FaceTime)
Skype: davidmlast. Zoom: Personal Meeting ID 774-488-6847

Class schedule and office hours to be confirmed. These courses are expected to be offered online using RMC Moodle, augmented by a teaching web sie.

Course descriptions

These courses include

- a lecture component with quizzes and a final exam for a half credit intended for Engineering students and
- an additional seminar component with written assignments and additional readings for a full credit intended for any student.

POE372 - Science, Technology, Politics, Society and the Environment (0.5 credit)

"This course introduces Science and Technology Studies (STS) and the ways in which STS researchers study how social, political, cultural, and material conditions shape scientific work and how science, in turn, shapes society. On the one hand, this course explores how methodological and substantive innovations from science and technology invigorate diverse social sciences and humanities disciplines. On the other hand, the course investigates the multiple effects of science and technology on global environmental change, particularly in terms of water and energy resources and sustainable development." (RMC Calendar. 2-0-4. Two contact hours and four study hours per week for a 13-week semester)

POE372 is an alternative to HIE289 and meets the requirement for a half credit course that links science and technology to society, politics, and the environment. Students enrolled in POE372 are welcome to audit POE374 seminars.

POE374 - Science, Technology and Public Policy (1 credit)

"It is widely understood that science and technological innovation are deeply linked to economic growth in a society and its corresponding ability to generate societal well-being. Thus, one could say that the public role of science is increasingly growing. This course will examine the public policy behind and the government's role in the science and technology innovation system and address questions that will explore the relationship between scientific research and political decision-making. The course will provide students with: a background on the science and technology policy environment; a multidisciplinary toolkit for thinking about science and technology policy and an understanding of the "social science" aspect of science and technology policy." (RMC Calendar. 3-0-6. Three contact hours and six study hours per week for a 13-week semester)

Learning Objectives

"An ability to analyze social and environmental aspects of engineering activities. Such ability includes an understanding of the interactions that engineering has with the economic, social, health, safety, legal, and cultural aspects of society, the uncertainties in the prediction of such interactions; and the concepts of sustainable design and development and environmental stewardship."[1]

Students will understand and apply key social science concepts and methods that link science and technology to politics and policy, society, economy, and security.

POE374 fits in the field of public administration or the stream "Canada". The three modules of the course address elements of human security, national security, and international security and are suitable as an elective course with military content for students in Military and Strategic Studies.

Course requirements and expectations

All students must participate each week. POE372 (half-credit) students may post weekly questions and comments for participation points and will have the opportunity to practice for the module quizzes each week. There will be a quiz for each module (roughly every three weeks) which must be completed during the week in which it is due. POE374 (full credit) students must participate in weekly seminars and submit written work on schedule. Written assignments must be peer-reviewed by assigned writing partners before final submission. POE374 students will be assigned as seminar leaders.

Class organization

The first week will test video options. A weekly schedule for online submissions will be established in the first week. Some seminars will be scheduled video sessions. All classes will permit asynchronous contributions through Moodle. There will be a weekly video office/corridor-chat session for Q&A.

Absences

Failure to participate in any week will be considered an absence. Absences must be approved by the professor.

Academic Integrity

Academic misconduct consists of any form of plagiarism, cheating, or violations of academic ethics, essentially seeking to pass someone else's work as your own. Academic misconduct is a serious offence and violates CAF values. Consequences of academic misconduct can range from failing the course to expulsion from RMC. Students must complete the Moodle test on Academic Regulation 23 by week 2.

[1] Canadian Engineering Accreditation Board, *A Guide to Outcomes Based Criteria for Visiting Team Chairs and Program Visitors,* Version 1.25, March 2015, p. 23.

Required textbooks

All required readings and lecture notes will be provided online.

Course evaluation – POE372 (half-credit)

Online quizzes (one per module) – 40 percent
Weekly participation online – 20 percent
Final exam (short answer and essay) – 40 percent

Course evaluation – POE374 (full credit)

Online quizzes (one per module) – 20 percent
Weekly participation online – 10 percent
Book review – 20 percent
Written assignment – 50 percent
- Proposal – 10
- Annotated bibliography – 10
- Final paper - 30

Experiential learning alternatives to traditional written assignments are available on instructor approval but must be confirmed with phased delivery dates before the end of the second week. See course website.

Course outline – elaborated on the course website

Seminars will be either scheduled on video chat or asynchronous. Further details will be posted on the course website. Phone-in guests are anticipated for selected seminars.

Week	Modules	372/374 Lectures	374 Seminars
1.	Foundations	Science and technology; Politics and public policy; Environment and society; Growth and development	Planning written assignments and deadlines (VTC)
2.	Module 1: Descriptive models and analytical tools	Evidence-based technology policy	Evidence and policy
3.		Canada's innovation strategies	How consistent? How vulnerable?
4.		Decision-making processes in Ottawa	How does influence work?
5.	Module 2: Environment and Growth (International security)	Economic growth and the carbon economy	The growth challenge
6.		Climate change and environment	The climate challenge
7.		Slower by design or disaster	Capitalism: problem or solution?
8.	Module 3: Society and employment (Human security)	Technological advances and employment	Technology impact on society?
9.		Political choices: markets and planning	Policy impact on technology?
10.		Glassco, foreign investment and policy	Canadian policy options?
11.	Module 4: Procurement and defence (National security)	Canada's National Shipbuilding Strategy	Industrial infrastructure policies
12.		Next Generation Fighter Aircraft technology	Technological development policies
13.		Procurement processes	Cubicle warrior strategies
Exam review sessions will be provided on request. The exam will be held during the scheduled exam period.			

References

Abbott, A. (2001). Chaos of disciplines. University of Chicago Press.

Abbott, A. (2014). The system of professions: An essay on the division of expert labor. University of Chicago Press.

Atkinson-Grosjean, J. (2002). Science policy and university research: Canada and the USA, 1979-1999. International Journal of Technology, Policy and Management, 2(2), 102-124.

Bardach, Eugene. 2011. Practical Guide for Policy Analysis Paperback. CQ Press.

Bratton, B. H. (2016). The stack: On software and sovereignty. MIT press.

Brooks, R. (2007). Creating military power: The sources of military effectiveness. Stanford University Press.

Buxton, N., & Hayes, B. (Eds.). (2016). The Secure and the Dispossessed: How the military and corporations are shaping a climate-changed world. Pluto Press.

Clark, G. (2008). A farewell to alms: a brief economic history of the world. Princeton University Press.

Cooke, P., Uranga, M. G., & Etxebarria, G. (1997). Regional innovation systems: Institutional and organisational dimensions. Research policy, 26(4), 475-491.

Cudworth, Erika, Peter Senker, and Kathy Walker, editors. (2013) Technology, Society and Inequality: New Horizons and Contested Futures. Peter Lang.

Dartnell, L. (2014) The knowledge: How to Rebuild our World from Scratch. New York: Penguin.

Fleck, L. (1935, 2012). Genesis and development of a scientific fact. University of Chicago Press.

Freeman, C. (2002). Continental, national and sub-national innovation systems: complementarity and economic growth. Research policy, 31(2), 191-211.

Gordijn, B., & Chadwick, R. (Eds.). (2008). Medical enhancement and posthumanity (Vol. 2). Springer Science & Business Media.

Gore, A. (2013). The future: Six drivers of global change. Random House Incorporated.

Gummett, Phillip and Judith Reppy (editors) 1988. The Relations Between Defence and Civil Technologies. Springer Netherlands

Harrison, K., & Hoberg, G. (1994). Risk, science, and politics: Regulating toxic substances in Canada and the United States. Montreal and Kingston: McGill-Queen's University Press.

Holmes, Ken (2012) Foreign Ownership Control and Influence in the 21st Century: Analysis of Risk, Technical, and Organizational Requirements. Ottawa: Industrial Security Sector, Public Works and Government Services.

Howlett, M., Ramesh, M. and Perl, A. (2009) Studying Public Policy: Policy Cycles and Policy Subsystems. New York: OUP.

Hughes, Thomas, P. (2004) Human-Built World: How to Think about Technology and Culture. Chicago: University of Chicago Press. [used for HIE289]

Jasanoff, S. (Ed.). (2004). States of knowledge: the co-production of science and the social order. Routledge.

Jerven, M. (2014). Poor numbers and what to do about them. The Lancet, 383(9917), 594-595.

Johnson, D. (2016). Thinking Government: Public Administration and Politics in Canada, fourth edition. University of Toronto Press.

Kellett, S. (2008) Borrowed Knowledge: Chaos Theory and the Challenge of Learning Across Disciplines. Chicago: University of Chicago Press.

Klein, N. (2015). This changes everything: Capitalism vs. the climate. Simon and Schuster.

Kunstler, J.H. (2012) Too Much Magic: Wishful Thinking, Technology, and the Fate of the Nation. New York: Grove Press.

Landry, R., Amara, N., & Lamari, M. (2001). Utilization of social science research knowledge in Canada. Research policy, 30(2), 333-349. http://www.rqsi.ulaval.ca/ang/pdf/publication4.pdf

Lejano, R. P. (2006). Frameworks for policy analysis: Merging text and context. Routledge.

Lundvall, B. Å. (2007). National innovation systems—analytical concept and development tool. Industry and innovation, 14(1), 95-119

Macdonald, D. (2020). Carbon Province, Hydro Province: The Challenge of Canadian Energy and Climate Federalism. University of Toronto Press.

Markowski, S., Hall, P., & Wylie, R. (Eds.). (2009). Defence Procurement and Industry Policy: A small country perspective. Routledge.

Marland, A., & Wesley, J. (2018). The Public Servant's Guide to Government in Canada. University of Toronto Press.

Mazzucato, Mariana (2014). The Entrepreneurial State: Debunking Public vs. Private Myths in Risk and Innovation. Anthem Press.

McNeely and Wolverton (2008) Reinventing Knowledge: From Alexandria to the Internet. New York: WW Norton.

Mirowsky, Philip (2013) Never let a serious crisis go to waste: How neoliberalism survived the financial meltdown. London: Verso.

Mulgan (2013) The Locust and the Bee: Predators and Creators in Capitalism's future. Princeton University Press.

Nelson, R. (1998). National innovation systems. Regional innovation, knowledge and global change, 11-26.

Nelson, R. R. (Ed.). (1993). National innovation systems: a comparative analysis. Oxford university press.

Niosi, Jorge. 2000. Canada's National System of Innovation. Kingston: McGill-Queen's University Press.

Nossal, K. R. (2016). Charlie foxtrot: Fixing defence procurement in Canada. Dundurn.

Page, K. (2015). Unaccountable: Truth and lies on parliament hill. Penguin Canada.

Pawson, Roy. (2006) Evidence-Based Policy: A Realist Perspective. London: Sage See also the supporting web site: www.leeds.ac.uk/realistsynthesis.

Piketty, Thomas (2014) Capital in the Twenty-First Century.

Pool, Robert. (1997) Beyond Engineering: How Society Shapes Technology. New York: Oxford University Press. [used for HIE289]

Rogers, Everett M. (2003) Diffusion of Innovations, fifth edition. New York: Free Press [oc-Ko]

Rosenthal, D. B. (1989). Two approaches to science-technology-society (S-T-S) education. Science education, 73(5), 581-589.

Savoie, D. J. (2013). Whatever happened to the music teacher? How government decides and why. McGill-Queen's Press-MQUP.

Sen, G. (1984). The military origins of industrialisation and international trade rivalry. London: Pinter.

Smardon, Bruce. 2014. Asleep at the Switch: The Political Economy of Federal Research and Development Policy since 1960. Kingston: McGill-Queen's.

Snow, C. P. (1960, 2013). Science and government. Harvard University Press.

Snow, R. E. (1987). Core concepts for science and technology literacy. Bulletin of Science, Technology, & Society, 7, 720-729. http://files.eric.ed.gov/fulltext/ED309996.pdf#page=160

Solomon, J. (1988a). Science technology and society courses: Tools for thinking about social issues. *International Journal of Science Education*, 10(4), 379-387.

Solomon, J. (1988b). The dilemma of science, technology and society education. Development and dilemmas in science education, 266-281. http://files.eric.ed.gov/fulltext/ED309081.pdf#page=281 [Pdf is whole book]

Standing, G. (2014). The Precariat-The new dangerous class. Amalgam, 6(6-7), 115-119.

Turner, Chris, (2013). The War on Science: Muzzled Scientists and Wilful Blindness in Stephen Harpers Canada. Toronto: Greystone Books.

Wainwright, J., & Mann, G. (2018). Climate Leviathan: A political theory of our planetary future. Verso Books.

Wallace-Wells, D. (2020). The uninhabitable earth: Life after warming. Tim Duggan Books.

Waterstone, Marvin. Risk and Society: The Interaction of Science, Technology and Public Policy Vol. 6. Springer Science & Business Media, 1992.

Weimer, D. L., & Vining, A. R. (2017). Policy analysis: Concepts and practice. Taylor & Francis.

Weiss, L. (2014) America Inc.? Innovation and Enterprise in the National Security State. Ithaca, NY: Cornell University Press

Williams, Trevor I. (2003) A history of invention, from stone axes to silicon chips. London: Time Warner. [used for HIE289]

Wittes, Benjamin. 2015. The Future of Violence: Robots and Germs, Hackers and Drones—Confronting A New Age of Threat. New York: Basic Books.

Zuboff, S. (2019). The age of surveillance capitalism: The fight for a human future at the new frontier of power. Profile Books.