



RENr 427

SCIENCE POLICY AND THE CANADIAN NORTH

In Winter 2021, RENr 427, Science Policy in the Canadian North, is being offered at Yukon University as part of the Northern Environmental and Conservation Sciences, B.Sc. Program. All students registered in RENr 427 must adhere to the requirements outlined in this course syllabus. University of Alberta students must also be aware of, and adhere to, the University's Code of Student Behaviour, referenced in the outline.

INSTRUCTOR:	Dr. Aynslie Ogden Adjunct Faculty, University of Alberta; Adjunct Faculty, Yukon University; Senior Science Advisor, Executive Council Office, Government of Yukon
OFFICE HOURS:	By appointment
OFFICE LOCATION:	Phone or zoom
TELEPHONE/E-MAIL:	867-335-9058; aynslie.ogden@gov.yk.ca

CLASS DAYS & TIMES: Monday and Wednesday, 8:30 – 10:00am (by Zoom). Classes will be delivered synchronously and asynchronously. Unless a class time is specifically identified as being asynchronous time (check class announcements regularly), students are expected to attend posted online class times.

CLASS LOCATION: Due to public health measures to prevent the spread of COVID-19, this course will not be taught in a classroom setting for the Winter 2021 offering.

COURSE DESCRIPTION:

U of Alberta's Policy about course outlines can be found in Course Requirements, Evaluation Procedures and Grading of the University Calendar.

The purpose of this course is to expose students to key themes in science policy in the Canadian North, and to prepare students for careers at the northern science-policy interface. Case studies from the Canadian North will be used to explore the main themes of the course.

STUDENT LEARNING OUTCOMES AND COMPETENCIES:

Upon successful completion of this course students will be able to do the following:

- Articulate the basic elements of the policy-making process and how science contributes to policy making
- Understand the process by which scientific knowledge is generated and the role science plays in society
- Develop an understanding of the two elements of science policy: science for policy, and policy for science
- Articulate elements of successful science-policy integration including the role of the scientist, and the role of the policy maker
- Have detailed knowledge of a number of case studies in northern Canadian science policy
- Apply critical thinking, writing, oral presentation and research skills

COURSE FORMAT (3-0-0):

This 13-week course will take place two times a week, Mondays and Wednesdays from 8:30-10:00am in the winter semester. The course will be taught both synchronously (in real time, where students, their instructor and their classmates are required to connect via zoom on a set schedule) as well as asynchronously (students are able to access content when it best meets their schedules and assignments are completed to deadlines).

The course is divided into weekly modules. Each module includes required and recommended readings and will be accompanied by study questions that will form the basis of the examinations. Students will be expected to read assigned module readings, and encouraged to explore and read supplementary material. Other media may be included (e.g. video, internet) or suggested. Students are recommended bring issues and questions on the study questions to class or to the instructor during office-hours.

Students are required to complete 3 assignments targeted to developing competency in applying scientific evidence to policy making that will be due within a week of being assigned. Students will also be required to carry out a science-policy analysis that will involve developing a proposal, a written paper, and an oral presentation to the class. Students will have a mid-term and a final exam. The assignments may involve presenting answers to the class and/or submitting written answers to the instructor.

A number of classes will be seminar-format, which means that in these classes students will share responsibility for leadership in learning.

COURSE PREREQUISITES AND/OR CO-REQUISITES:

Registration in Yukon University/University of Alberta B.Sc. in Environmental and Conservation Sciences degree program.

Due to public health measures to prevent the spread of COVID-19, this course will be taught online using Zoom and Moodle platforms for the Winter 2021 offering. Students planning to take this course are required to have access to the internet. It is the student's responsibility to be familiar with accessing course materials via YukonU's Moodle system and how to use the Zoom video conferencing platform.

YukonU's Information Technology Services website contains information on Moodle system requirements as well as support for how to use Moodle and Zoom platforms <https://www.yukonu.ca/student-life/technical-resources>

REQUIRED TEXTBOOKS/MATERIALS:

No one text covers this course. In addition, students should not expect that the notes they take during class will be adequate to equip them to participate in class or to be prepared for examinations. The required reading list below will be part of testable material. It is the student's responsibility to go online weekly to access required and recommended reading materials. In addition, students will be expected to create their own reading list that is relevant to the topic of their science policy review. The reading list below is subject to change. The final required and recommended reading list will be updated on the course website throughout the term.

Required readings (available at YukonU Bookstore):

- Hammond, J.S., R.L. Keeney and H. Raiffa. 2015. *Smart Choices: A Practical Guide to Making Better Decisions*. Harvard Business Review Press.

Required readings that will be made available online:

The following list is not comprehensive, but are examples of the types of readings that will be posted on line each week with each module. The reading list below is subject to change. The reading list will be updated on the course website throughout the term.

Boland, A., M. G. Cherry and R. Dickson. 2017. *Doing a Systematic Review: A Student's Guide*. Sage Publications.

Goldacre, B. 2017. *I think you'll find it's a bit more complicated than that*. Fourth Estate.

Morris, R. 1998. *How to tell what is science from what isn't*. In: Brockman (ed.) *Doing science: the reality club*.

Council of Canadian Academies 2014. *Science culture: where Canada stands*. (Report in Focus)
http://www.scienceadvice.ca/uploads/eng/assessments%20and%20publications%20and%20news%20releases/science-culture/scienceculture_rif_en.pdf

Compound Interest. 2014. *A rough guide to spotting bad science*. <http://www.compoundchem.com/2014/04/02/a-rough-guide-to-spotting-bad-science/>

Wilson and Arvai, 2011. *Structured decision-making: Using decision research to improve stakeholder decision making and results*. Oregon State University.

Assembly of First Nations. 2007. *OCAP (Ownership, Control, Access and Possession): First Nations Inherent Right to Govern First Nations Data*. Available online: <http://64.26.129.156/misc/ocap.pdf>

Karrer L. et al. 2011. *Science-to-Action Guidebook*. Science and Knowledge Division, Conservation International, Arlington, Virginia, USA. Available online: <http://www.science2action.org/>

HM Government. 2005. *Guidelines on scientific analysis in policy making*. Available online: <http://webarchive.nationalarchives.gov.uk/+http://www.dti.gov.uk/files/file9767.pdf>

International Arctic Science Committee. 2013. *Statement of Principles and Practices for Arctic Data Management*. Available online: http://www.iasc.info/images/pdf/IASC_data_statement.pdf

Pielke, R. A. (2007) *The Honest Broker: Making sense of science in policy and politics*. Chapters 1-4. Cambridge University Press.

Government of Northwest Territories. *Summary of best practices for applying traditional knowledge in Government of the Northwest Territories Programming and Services*. Available online: https://www.enr.gov.nt.ca/sites/enr/files/reports/tk_best_practices_summary.pdf

Recommended reading

A list of recommended readings will be provided for each class. Where possible, these readings will be made available on the course website for free download. Students will not be tested on these readings, but may wish to consult these references for additional clarity on topics discussed in class. The readings may also be useful to cite in their research paper, depending on the student's topic. In addition, the readings may provide additional insight/ content/ guidance to support a weekly class participation/ homework assignment. In addition to the recommended reading list, students should be prepared to conduct additional, independent research to source appropriate materials to support the completion of their assignments. Note: The reading list below is subject to change. The reading list will be updated on the course website throughout the term.

Collins et al. 2015. *The Production of Quick Scoping Reviews and Rapid Evidence Assessments: A How to Guide*. Available online: <https://connect.innovateuk.org/web/jweg>

Gregory, R., L. Failing, M. Harstone, G. Long, T. McDaniels and D. Ohlson. *Structured Decision Making: A*

U of Alberta's Policy about course outlines can be found in Course Requirements, Evaluation Procedures and Grading of the University Calendar.

Practical Guide to Environmental Management Choices. Wiley-Blackwell.

AAAS, 2013. *Special Issue on Science Communications*. Science Vol 342, 4 October 2013. Available online: <http://www.sciencemag.org/site/special/scicomm/index.xhtml>

Baron, N. 2010. *Escape from the Ivory Tower: A Guide to Making your Science Matter*. Island Press.

Bogenschneider, K. and T.J. Corbett. 2010. *Evidence-Based Policy Making: Insights from policy minded researchers and research minded policymakers*. Routledge.

Bardach, E. 2005. *A Practical Guide for Policy Analysis: The Eightfold Path to More Effective Problem Solving*. CQ Press.

Cartwright, N. and J. Hardie. 2012. *Evidence-Based Policy Making: A Practical Guide to Doing it Better*. Oxford University Press.

Clark, T.W. 2002. *The Policy Process: A Practical Guide for Natural Resource Professionals*. Yale University Press.

European Commission Directorate General for Research. 2010. *Communicating research for evidence-based policy making: a practical guide for researchers in social sciences and humanities*. Available online: http://ec.europa.eu/research/social-sciences/pdf/guide-communicating-research_en.pdf

Government of Northwest Territories. 2017. *Government of the Northwest Territories Knowledge Agenda*. Available online: https://www.assembly.gov.nt.ca/sites/default/files/td_406-182.pdf

Government of Yukon. 2016. *Government of Yukon Science Strategy*. Available online: <https://yukon.ca/en/science-strategy>

Turner, C. 2013. *The War on Science*. Greystone Books.

Task Force on Northern Research. 2000. *From Crisis to Opportunity: Re-building Canada's Role in Northern Research*. Available online: http://www.nserc-crsng.gc.ca/doc/Reports-Rapports/CrisisNorth-CriseNord_eng.pdf

Department of Innovation, Science and Economic Development Canada. 2018. *Model policy on scientific integrity*. Available online: <http://www.ic.gc.ca/eic/site/052.nsf/eng/00010.html>

Department of Crown-Indigenous Relations and Northern Affairs Canada. 2019. *Policy on Scientific and Indigenous Knowledge Integrity*. Available online: <https://www.rcaanc-cirnac.gc.ca/eng/1575567784632/1575567805298>

COURSE WEBSITE

YukonU's Moodle system will host the course website. The course website will be used to provide links to readings, lecture slides, study questions, assignments and the student's gradebook. It is the student's responsibility to check the course website weekly for updates. Students will also be required to submit assignments through Moodle. YukonU's Information Technology Services website is a helpful resource for how to use Moodle <https://www.yukonu.ca/student-life/technical-resources>

UNIVERSITY OF ALBERTA ACADEMIC INTEGRITY AND CODE OF STUDENT BEHAVIOUR

Academic Integrity

The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (online at www.governance.ualberta.ca) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

Code of Student Behaviour

All students at the University of Alberta are subject to the Code of Student Behaviour, as outlined at:

<https://www.ualberta.ca/governance/resources/policies-standards-and-codes-of-conduct/code-of-student-behaviour>. Please familiarize yourself with it and ensure that you do not participate in any inappropriate behavior as defined by the Code. Key components of the code include the following statements.

30.3.2(1) No Student shall submit the words, ideas, images or data of another person as the Student's own in any academic writing, essay, thesis, project, assignment, presentation or poster in a course or program of study.

30.3.2(2) c. No Student shall represent another's substantial editorial or compositional assistance on an assignment as the Student's own work.

PROFESSIONALISM AND CLASSROOM RULES OF ENGAGEMENT

Unless a class time is specifically identified as being asynchronous time, students are expected to attend posted online class times. Students are expected to be engaged during classroom time and courteous in all course activities, and to be on time for class. Students are also asked to be aware that COVID-necessitated transition to online delivery is a learning experience for both instructors and students, and are advised to be prepared to be patient as all adjust to this new teaching and learning environment.

COURSE REQUIREMENTS/EVALUATION:

Assignments

U of Alberta's Policy about course outlines can be found in Course Requirements, Evaluation Procedures and Grading of the University Calendar.

Detailed marking schemes and guidelines for each main aspect of the course upon which students will be evaluated will be provided throughout the term.

1. Assignments – Students will be required to complete 3 assignments targeted to developing competency in applying scientific evidence to policy making that will be due within a week of being assigned.
2. Science-Policy Analysis Proposal – Students will be required to submit a proposal for their science-policy analysis review paper. A template for the proposal will be provided by the instructor. Students will be strongly encouraged to meet with the Instructor during office hours to discuss their proposal before it is submitted.
3. Briefing Note – Each student will be required to prepare a briefing note using the template provided. The briefing note will be graded on the clarity of the material presented, and suitability of the material presented to the intended audience (a senior decision-maker).
4. Plain-Language Summary - Each student will be required to prepare a plain language summary of a scientific paper using the template provided. The plain language summary will be graded on the clarity of the material presented, and suitability of the material presented to the intended audience (the general public).
5. Science-Policy Analysis Review Paper – Students will prepare an analytical review paper on a science-policy topic, chosen in consultation with the instructor (typed/word processed, 3,000 to 4,000 words). Each paper must include a reference list/bibliography. Regular statements/indications of progress on the paper will be required. As an alternative to the review paper, and subject to approval by the instructor, students can propose and complete a project of their interest to meet the writing/research aspects of the course.
6. Presentation of Science Policy Analysis– Each student will be required to deliver a 10-minute presentation on their science policy analysis review paper or project. Presentations will be graded on the clarity of the material presented, oral presentation skills, the quality of visual presentation aids, and quality of responses to questions posed by the Instructor and the class following the presentation. Students will sign up for presentation slots that will be held during the last week of the course.

Exams

1. Exam I – (Take-home exam). There will be a take home exam consisting primarily of short answer and essay questions at the middle of the term. Exam questions will be based on the readings, the lectures and on the study questions that accompany the readings.
2. Exam II – (Final exam). There will be a 3-hour open book exam consisting primarily of short answer and essay questions at the end of term. Exam questions will be based on the

readings, the lectures and on the study questions that accompany the readings.

Note regarding missing a final exam: Instructors can neither give permission to a student to miss the final exam nor grant a request for a deferred final exam. Students are encouraged to check exam schedules prior to making travel or event plans. The decision to grant a deferred final exam can only be granted by their own Faculty (B.Sc. Northern ENCS students must speak with an ENCS Program Advisor at Yukon University). Acceptable reasons for an excused absence may include illness or bereavement, and unacceptable reasons include weddings, travel arrangements or being on vacation. The University policy on deferred exams can be found in Section 23.3.2 of the University Calendar. It includes specific instructions on how to obtain a deferral.

Due Dates and Late Assignments

All assignments are due at the beginning of class and must be submitted online through the course website.

Students are expected to abide by the due dates listed below. Students will be penalized for handing in assignments late. Assignments submitted up to one week late after the deadline will have 25% deducted from the mark. Assignments submitted up to two weeks late will have 50% deducted from the mark. After two weeks, a mark of 0% will be given.

If a student is aware that they have a conflict with a due date, it is the student's responsibility to make arrangements with the instructor at least two weeks in advance of the due date. The student will be required to make arrangements to hand in the assignment or complete the exam in advance of the due date or will be subject to the penalties noted above.

TBD	Assignments (3)
January 27, 2021	Science-policy analysis proposal
February 10, 2021	Briefing note
Assigned February 17 Due March 1, 2021	Take home exam (Exam I)
March 17, 2021	Plain language summary
March 31, 2021	Science-policy analysis paper
April 7 or 12, 2021	Presentation of science-policy analysis
TBD, during YukonU exam period	Exam II

Evaluation

The course grade will be determined as follows:

	Percent
Assignments (3, each worth 5%)	15

U of Alberta's Policy about course outlines can be found in Course Requirements, Evaluation Procedures and Grading of the University Calendar.

Science-policy analysis proposal	10
Exam I	10
Science-policy analysis review paper	25
Presentation of science-policy analysis	10
Briefing note	5
Plain-language summary	5
Exam II	20
Total	100

Assignment of grades

The total numerical score will be converted to a grade on University of Alberta's letter grading system:

Percent	Letter grade
95-100	A+
90-94	A
85-89	A-
79-84	B+
75-78	B
71-74	B-
67-70	C+
64-66	C
60-63	C-
55-59	D+
50-54	D
0-49	F

ELECTRONIC DEVICES:

At the time this course outline was drafted, COVID-19 public health measures are preventing in-person exams. These measures are expected to continue for the Winter 2021 offering of this course. Due to these exceptional circumstances, students will be given open-book examinations to complete at home within a set time period.

RECORDING OF LECTURES, LABS, ETC.:

Audio or video recording, digital or otherwise, of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Student or instructor content, digital or otherwise, created and/or used within the context of the course is to be used solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the content author(s).

Please note that some classes in the B.Sc. Northern ENCS Program may be recorded using web conferencing software, and links to recordings may be posted on the class website.

YUKON FIRST NATIONS CORE COMPETENCY:

Yukon University recognizes that a greater understanding and awareness of Yukon First Nations history, culture and journey towards self-determination will help to build positive relationships among all Yukon citizens. As a result, to graduate from ANY Yukon University program, you will be required to achieve core competency in knowledge of Yukon First Nations. For details, please see www.yukonu.ca/yfnccr.

ACADEMIC ACCOMMODATION:

Reasonable accommodations are available for students requiring an academic accommodation to fully participate in this class. These accommodations are available for students with a documented disability, chronic condition or any other grounds specified in section 8.0 of the Yukon University Academic Regulations (available on the Yukon University website). It is the student's responsibility to seek these accommodations. If a student requires an academic accommodation, they should contact the Learning Assistance Centre (LAC): lac@yukonu.ca.

TENTATIVE SCHEDULE / TOPIC OUTLINE

Week	Module/Topic
<i>Introduction to science policy in the Canadian North</i>	
1	What is science and how do scientists know what they know?
2	What is policy and how is it developed?
3	Indigenous ways of knowing, doing and being and public policy
4	Requirements for successful evidence-based decision-making
<i>Science for policy in the Canadian North</i>	
5	Show me the evidence! Evidence reviews: a comparison of methods
6	What policy questions social science can answer and how
7	Doing policy relevant science in the north

<i>Policy for science in the Canadian North</i>	
8	Policy for science in the Canadian North
9	Science integrity, science professionalism, research ethics and licensing
10	Data policies: open data, OCAP, big data
<i>Science policy integration in the Canadian North</i>	
11	Barriers to using evidence in policy making and practice
12	Science communication
13	Roles of scientists and policy makers in successful science policy integration