



RENr 401K / NOST 229

Science Policy and the Canadian North

In Winter 2017, NOST 229, Science Policy and the Canadian North is being offered at Yukon College concurrent with University of Alberta's RENr 401K as part of the Northern Environmental and Conservation Sciences, B.Sc. Program. All students registered NOST 229 or RENr 401K 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; Yukon College students must be aware of, and adhere to, Yukon College's Academic Regulations, also referenced in the outline.

INSTRUCTOR:	Dr. Aynslie Ogden Adjunct Faculty, Yukon College; Adjunct Faculty, University of Alberta; Senior Science Advisor, Executive Council Office, Government of Yukon
OFFICE HOURS:	TBA
OFFICE LOCATION:	TBA
TELEPHONE/E-MAIL:	867-667-5431, aynslie.ogden@gov.yk.ca
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CLASS DAYS & TIMES:	Wednesday 4:30-7:30pm
CLASS LOCATION:	C1511

COURSE DESCRIPTION:

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.

This course targets 1) students in the Northern Environmental and Conservation Sciences, B.Sc. Program and 2) is a recommended 3-credit elective in several diploma

programs in the Applied Arts and Applied Science and Management Divisions including the Northern Studies, Renewable Resources Management and Northern Science programs. Requirements for BSc students, evaluation and course grade will be assessed differently than those taking this course at the diploma level.

This course is also suitable to a broader audience including working science and/or policy practitioners and professionals.

This course may be made available to students outside Whitehorse via webinar, depending on demand.

EQUIVALENCY/TRANSFERABILITY:

UNBC NORS 2xx (3)

For current information on course transferability see <http://www.bctransferguide.ca>

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 and technology 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:

This 13-week course is being offered in the evenings to maximize participation by practitioners. Instruction will take place one evening a week over a 3-hour class in the winter semester. The course may also be made available through web conferencing for students interested in taking this course, but who are not located in Whitehorse.

The course is divided into 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 the instructor during office-hours.

Students will be given an assignment each week that will contribute to the weekly assignment mark. The assignments may involve presenting answers to the class from the study questions that accompany the readings and/or contributing to a class science policy toolbox and/or submitting written answers to the instructor.

A number of guest speakers will be invited to participate in the course. In addition, 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:

Students planning to take this course are required to have access to and be familiar with the operation of a computer. This course will emphasize the importance of locating and managing information on the internet, as this is an essential tool for interdisciplinary research in the modern world. On-line resources are offered as supplements and some classroom instruction.

For students taking the course as NOST 229

Students with a second-year standing in the Applied Arts or Applied Science and Management Divisions, or permission of the instructor or a program advisor in the Applied Arts or Applied Science and Management Divisions, are eligible to take the course. Students in the first year of a diploma program with relevant work experience may register with permission from the instructor.

For students taking the course as RENR 401K:

Registration in Yukon College/University of Alberta BSc in Environmental and Conservation Sciences degree program. U of A students are responsible for ensuring they have the necessary pre-requisites and co-requisites. Students may be dropped before or after the course drop date if pre-requisites and co-requisites are not met. If the instructor agrees to waive a pre-requisite or co-requisite, students must fill out a form in the office of Student Services and get a signature from the instructor.

For working professionals interested in auditing the course:

This course may be of interest to working professionals and practitioners who are not registered in a program at Yukon College or another institution but work in a field that would benefit from a background in science policy. Participation by these students is encouraged. These students require the instructor's permission to register. Participation by students outside of Whitehorse may be possible by web conference - please let the instructor know if you are interested in this option.

Students at other institutions:

Students at other institutions may be able to take this course via webinar. Such students

should have a Letter of Permission from their home institution if they intend to apply this course to their programs.

REQUIRED TEXTBOOKS/MATERIALS:

Required reading

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, to be prepared for examinations and/or to provide the basis for a student's research paper. In other words, students are expected to make use of the required reading list. The required reading list below could be part of testable material. It is the student responsibility to go online weekly to access required reading materials. Note: The reading list below is subject to change. The required reading list will be updated on the course website throughout the term.

Required readings (available at Yukon College Bookstore):

The following texts are an essential resource for the student term papers.

For students enrolled in RENR 401K: Gregory, R., L. Failing, M. Harstone, G. Long, T. McDaniels and D. Ohlson. *Structured Decision Making: A Practical Guide to Environmental Management Choices*. Wiley-Blackwell.

For students enrolled in NOST 229: Hammond, J.S., R.L. Keeney and H. Raiffa. 1999. *Smart Choices: A Practical Guide to Making Better Life Decisions*. Broadway Books.

Required readings that will be made available online:

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>

Association of Canadian Universities for Northern Studies. 2003. *Ethical Principles for the Conduct of Research in the North*. Available online: <http://acuns.ca/website/ethical-principles/>

Council of Canadian Academies Expert Panel on Science Priorities for the Canadian Arctic Research Initiative. *Vision for the Canadian Arctic Research Initiative*. 2008. Available online: <http://www.scienceadvice.ca/en/assessments/completed/canadian-arctic.aspx>

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

Morris et al. 2013. *The Lakehead Manifesto: Principles for Research and Development in the North*. Arctic Vol 66 (2): iii-iv. Available online: <http://pubs.aina.ucalgary.ca/arctic/Arctic66-2-iii.pdf>

Ogden, A.E. and M.E. Thomas. 2013. *Letter to the Editor re: the Lakehead Manifesto*. Arctic Vol 66, No 4. Available online: <http://arctic.synergiesprairies.ca/arctic/index.php/arctic/article/view/4342/4322>

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

The White House. *Presidential Memorandum on Scientific Integrity*. Available online: <http://www.whitehouse.gov/the-press-office/memorandum-heads-executive-departments-and-agencies-3-9-09>

Recommended reading

A list of recommended readings will be provided for each class. Where possible, these readings will be available online 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. Recommended readings that are not available online will be made accessible through the Yukon College library and/or may be purchased through an online book retailer such as Amazon. 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.

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

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. 2009. *Building a Path for Northern Science - GNWT's Science Agenda*. Available online: www.accessnwt.ca/for-researchers/resources-for-researchers/science-

[agenda](#)

Government of Yukon. *Yukon Scientists and Explorer's Act*. Available online:
<http://www.gov.yk.ca/legislation/acts/scex.pdf>

Government of Yukon. *Guidebook for Scientific Research in the Yukon*. Available online:
http://www.tc.gov.yk.ca/publications/Guidebook_on_Scientific_Research_2013.pdf

MacKay, M. and L. Shaxton. *Understanding and applying basic public policy concepts*.
[http://www.uoguelph.ca/omafra_partnership/ktt/en/worktogether/resources/understandingandapplyi
ngbasicpublicpolicyconcepts.pdf](http://www.uoguelph.ca/omafra_partnership/ktt/en/worktogether/resources/understandingandapplyi
ngbasicpublicpolicyconcepts.pdf)

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

Young, S.P. 2013. *Evidence-based policy making in Canada*. Oxford University Press.

Yukon College. 2013. *Protocols and Principles for Conducting Research with Yukon First Nations*.
Available online:
http://www.yukoncollege.yk.ca//downloads/YRC_FN_Initiativess_no_photos_inside_final_print.pdf

MyYC, E-CLASS, OR COURSE WEBSITE

A course website will be used to provide updated links to readings as well as additional material relevant to weekly assignments. It is the student's responsibility to check the course website weekly for updates.

UNIVERSITY OF ALBERTA ACADEMIC INTEGRITY AND CODE OF STUDENT BEHAVIOUR

Plagiarism and Cheating

The University of Alberta is committed to highest standards of academic integrity and honesty. Students must be familiar with standards regarding academic honesty and uphold policies of the University. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

All students at the University of Alberta are subject to the Code of Student Behaviour, as outlined in the 2014/2015 University Calendar. Students should familiarize themselves with the current version of the code and ensure they do not participate in any inappropriate behaviour as defined by it. Key components of the code specific to this course include the following statements. Plagiarism: 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. Cheating: no student shall represent another's substantial editorial or compositional assistance on an assignment as the student's own work. The most recent version of the Code of Student Behaviour can be found on line on the University of Alberta web site.

Students should speak with the course instructor about any questions or concerns about the code. Students should be particularly aware of the code as it pertains to internet and library research, use of previous class notes, reclamation plans of former students

and interviews or discussions with others.

YUKON COLLEGE ACADEMIC AND STUDENT CONDUCT

Information on academic standing and student rights and responsibilities can be found in the current Academic Regulations that are posted on the Student Services/ Admissions & Registration web page.

Plagiarism

Plagiarism is a serious academic offence. Plagiarism occurs when students present the words of someone else as their own. Plagiarism can be the deliberate use of a whole piece of another person's writing, but more frequently it occurs when students fail to acknowledge and document sources from which they have taken material. Whenever the words, research or ideas of others are directly quoted or paraphrased, they must be documented according to an accepted manuscript style (e.g., APA, CSE, MLA, etc.). Resubmitting a paper which has previously received credit is also considered plagiarism. Students who plagiarize material for assignments will receive a mark of zero (F) on the assignment and may fail the course. Plagiarism may also result in dismissal from a program of study or the College.

PROFESSIONALISM AND CLASSROOM RULES OF ENGAGEMENT

Students are expected to attend all lectures and labs, be engaged and courteous in all course activities, and to be on time for class. Please do not use cellular phones during class. Laptops are permitted for note taking and in-class work; however, please do not use laptops in class for non-class-related activities. While in computer labs, students are expected to refrain from using the computers to engage in non-class-related activities (e.g. Facebook, etc.).

COURSE REQUIREMENTS/EVALUATION:

NOST 229 Course Assignments

1. Weekly Assignments - Students will be given an assignment each week. The weekly assignment may involve preparing for an in-class activity and/or presenting answers to the class from the study questions that accompany the readings and/or contributing to a class science policy toolbox and/or submitting written answers to study questions the instructor.
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. 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, 2,500 to 3,000 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.
4. 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, and the quality of visual presentation aids. Students will sign up for presentation slots that will be held during the last week of the course.

RENr 401K Course Assignments

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. Weekly Assignments - Students will be given an assignment each week. The weekly assignment may involve preparing for an in-class activity and/or presenting answers to the class from the study questions that accompany the readings and/or contributing to a class science policy toolbox and/or submitting written answers to study questions the instructor.
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

The exams for students enrolled in the course as NOST 229 will differ from students enrolled in the course as RENR 401K. Higher expectations will be placed on students enrolled in the course as RENR 401K.

1. Exam I (Take home exam) - There will be 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 - There will be a 3-hour 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

EVALUATION

The evaluation criteria used for students enrolled in the course as NOST 229 will differ from students enrolled in the course as RENR 401K. Higher expectations will be placed on students enrolled in the course as RENR 401K. As noted above, detailed marking schemes and guidelines for each main aspect of the course upon which students will be evaluated will be provided throughout the term.

Students enrolled in the course as NOST 229:

	Percent
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Weekly assignments	15
Science-policy analysis proposal	10
Exam I (take-home)	15
Science-policy analysis review paper	25
Presentation of science-policy analysis	10
Exam II	25
Total	100

Students enrolled in the course as RENR 401K:

	Percent
Weekly assignments	15
Science-policy analysis proposal	10
Exam I (take-home)	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

Due Dates

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.

All assignments are due at the beginning of class, whether submitted as a hard copy or electronic copy. Students who choose to submit electronic copies are required to produce proof (e.g. hard copy of transmittal email) at the beginning of a class that they submitted their assignment on time.

The following are important due dates (note: at the beginning of class during the specified week).

Students enrolled in the course as NOST 229:

Weekly	Weekly assignments
January 25, 2017	Science-policy analysis proposal
Tentatively: assigned February 8, due February 22, 2017	Take home exam (Exam I)
March 29, 2017	Science-policy analysis paper
April 7, 2017	Presentation of science-policy analysis
Tentatively April 19, 2017	Exam II

Students enrolled in the course as RENR 401K:

Weekly	Weekly assignments
January 25, 2017	Science-policy analysis proposal
February 8, 2017	Briefing note
Tentatively: assigned February 8, due February 22, 2017	Take home exam (Exam I)
March 5, 2017	Plain language summary
March 29, 2017	Science-policy analysis paper
April 7, 2017	Presentation of science-policy analysis
Tentatively April 19, 2017	Exam II

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 College Academic Regulations (available on the Yukon College website). It is the student's responsibility to seek these accommodations. If a student requires an academic accommodation, he/she should contact the Learning Assistance Centre (LAC) at (867) 668-8785 or lassist@yukoncollege.yk.ca.

TENTATIVE SCHEDULE

Week	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	What is science policy? History of science policy in Yukon
<i>Policy for science in the Canadian North</i>	
4	Science funding: the most important science policy of all?
5	Science integrity, science professionalism, research ethics and licensing
6	Data policies
<i>Science for policy in the Canadian North</i>	
7	Doing policy relevant science in the north - part 1: theory
8	Doing policy relevant science in the north - part 2: tools and techniques
9	Science communication
<i>Science policy integration in the Canadian North</i>	
10	Evidence-based (informed) decision making
11	Roles of scientists and policy makers in successful science policy integration
12	Dealing with uncertainty
13	Review and class presentations