

EVDS 624 IMPACT ASSESSMENT AND RISK MANAGEMENT H (3-0)

PF 3160 Fri 9:30 - 12:20

Fall 2015

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PFA 3190, hours by appointment

Introduction

Environmental Impact assessment (EIA) employs widely used tools for designing developments wisely and for informing regulatory reviews and project approvals. EIA originated as a tool to identify significant negative effects of development, and to mitigate those effects through project planning and design. It has been described as one of the most successful policy innovations of the 20th Century. One criticism is that in theory EIA is about protecting societal and environmental values and providing for sustainability, but in practice it is about development project approval (Duinker and Greig 2007). The issuing of a report only to satisfy regulatory compliance for impact assessment is typically not an effective way to practice EIA (IAIA 2010). Cumulative effects management systems (CEMS) and Regional Strategic Environmental Assessment (RSEA) are recent and evolving innovations for governing the incremental effects of development relative to pre-defined outcomes, reference states, and thresholds with scaled interventions (CCME 2009, Johnson et al. 2011). The assessment of options and public consultation are central to good EIA practice. In addition, successful EIAs employ mitigation, monitoring and evaluation, and accountability systems to assure compliance and that requirements are implemented, and that desired outcomes are achieved. EIA methods are based in the physical, natural, and social sciences, which together are employed to assess effects of past, present, or future consequences of human activities and possible decisions. Management options that avoid, minimize or mitigate effects of development are integral to good impact assessments.

Cumulative environmental assessment (CEA) determines the capacity of the environment and ecosystems to support the effects of a combination of activities, past, current and forecast. CEA can be used to measure effects of activities on air, land, water and biodiversity relative to desired outcomes and thresholds defined in RSEAs. Relevant to this course, the evolving governance of land use in Alberta employs both CEMS and RSEA approaches that will address the potential impacts of all activities and carrying capacity at a regional scale.

In this course, approaches to biophysical and social impact assessment will be reviewed. Learning will be achieved through seminars lead by EIA leaders from Academia, Industry, Consultancy Companies and Government. We will also prompt discussion of literature and professional practice emphasizing critical review of theory and applications. Current federal and provincial impact assessment legislation, policies and EIA procedures will be addressed in discussion with representatives of regulatory agencies and practitioners.

Objectives

The goal of the course is to provide a theoretical and practical understanding of impact assessment and management, applications and limitations, emphasizing environmental governance. Learning objectives are to:

1. appreciate the purpose and role of EIA (including CEA) in decision-making processes;
2. gain awareness of various methods for estimating and managing environmental and social impacts;
3. understand the purpose of follow-up procedures (monitoring and evaluation), the options for designing them, compliance assurance, and accountability systems;
4. understand the strengths and weaknesses of EIA as a planning tool;
5. understand the technical, social and political limitations of EIA;
6. consider the relationships between EIA and regional planning;
7. understand the role of strategic assessment of policies, plans & programs (SEA),
8. appreciate the regulatory procedures that apply to CEA and EIA nationally and in Alberta;
9. learn about the development and implementation of CEMS and RSEA in Alberta

Teaching Approach

Seminars lead by EIA leaders from Academia, Industry, Consultancy Companies and Government, and discussions are employed in inquiry-focused explorations of SEA, CEA and EIA theory, practice and environmental governance. Emphasis is placed on learning through reflective discourse among instructors, students, regulators and practitioners.

Content: Topic Areas

1. Historical foundations of EIA, definitions, and types of EIA
2. EIA legislation provincially, federally, and international
3. The purpose and role of EIA in the decision-making process
4. Strengths and limitations of EIA as a planning tool
5. Administrative, regulatory and technical procedures
 - Scoping and terms of reference
 - Methods and use of baseline studies
 - Methods for estimating and managing environmental and social impacts
 - Significance of impacts
 - Formats for reporting impact assessments
 - Impact management - the mitigation hierarchy
 - Follow-up procedures (monitoring and evaluation), the options for designing them, compliance assurance, and accountability systems
 - Application of follow up studies
 - EIA report review and decision-making
6. Criticisms and innovations in EIA practice, including the evolving roles of CEMS and RSEA and their implications for EIA practice.

Means of Evaluation

The course evaluation will be based on student presentations, facilitation of reflective discussions, and a term paper. There will be no final examination. The learning model relies on active learning and participation in discussions. Consequently students are expected to contribute to scheduled classes.

Assignment #1: Student presentation and facilitation of class discussions on an assigned topic	25%
Assignment #2: Individual presentation of term paper topic	25%
Assignment #3: Individual term paper - written document	40%
Individual participation in group discussions	10%

Students must obtain a passing grade in all evaluative components of the course to be eligible for a passing grade.

Presentation and facilitation of a discussion on an assigned topic (25%)

Students will present a seminar on an assigned topic then facilitate a class discussion of the topic and assigned readings. Readings must be assigned during the class preceding the seminar or earlier. Presentations will be evaluated on the following criteria: applicability of readings and references, thoroughness of content, logic and organization, visual effectiveness and quality of presented materials, and presentation style (vocal clarity, posture, eye contact with audience).

Presentation of a term paper topic (25%)

Students will present their term paper topic. Presentations will be evaluated on the following criteria: thoroughness of content, logic and organization, visual effectiveness and quality of presented materials, and presentation style. It is expected that the content of the term paper (below) will be presented including draft: title, background (relevant literature searched), logic of inquiry, findings (messages, tables, graphs, other visuals), unexpected conclusions, discussion of findings and unexpected conclusions (take-home message).

Term paper (40%)

Each student will submit a review paper on a topic selected from a list of suggested topics, or on a topic of their choice approved by the instructors. Often, the student's topic will evolve from the pick of Assignment #1. The paper must follow provided guidelines. The paper must be submitted as Word or Acrobat Reader file by a date and time prescribed in the assignment guidelines document.

A review paper is a synthesis of primary sources (mainly research papers published in academic journals) on a given topic. A review paper demonstrates that the writer has an understanding of the literature, describes contrasting perspectives hypotheses or normative views, and may formulate an insightful synthesis. A review paper synthesizes information from the primary 'peer reviewed' literature, and from other

sources to a lesser extent (e.g. gray literature and government documents), to produce a coherent argument about a topic.

A key aspect of a review paper is that it provides the student rendering of evidence for particular points of view, disagreements, contrasting perspectives, hypotheses or normative views, and provides critical reflective comments on the topic. Thus, the paper should be original (by the student) and cannot summarize the logic of other papers or authors. Term papers will be graded on the following criteria: use of the literature, range and depth of content, logic and synthesis, grammar, and format. They should include the following elements: title, background or introduction (relevant literature searched), logic of inquiry or methods, findings or results (key messages, tables, graphs, other visuals), unexpected results or conclusions, discussion of findings and unexpected conclusions (take-home message).

Readings

Many of the following papers and publications either bear directly on the tasks that you will be undertaking in this course or may be relevant to your academic and professional interests. Web-based materials may be accessed directly by students. Required readings may be assigned in advance of specific classes.

Textbook, available from UofC Library and instructor:

Bram F. Noble, Introduction to Environmental Impact Assessment: A Guide to Principles and Practice (2006, second edition 2010).

Other readings:

Baxter, W. W.A. Ross and H. Spaling. 2001. Improving the practice of cumulative effects assessment in Canada. *Impact Assessment and Project Appraisal* 19:253-262.

Canadian Council of Ministers of the Environment. 2009. Regional strategic environmental assessment in Canada: Principles and guidance. Canadian Council of Ministers of the Environment, Winnipeg, Manitoba. Website: www.ccme.ca

Dena Taylor, Health Sciences Writing Centre, University of Toronto:
<http://www.writing.utoronto.ca/advice/specific-types-of-writing/literature-review>

Dube, M.G. 2003. Cumulative effect assessment in Canada: a regional framework for aquatic ecosystems. *Environmental Impact Assessment Review* 23: 723-745.

Duinker, P. and L. Greig. 2007. The importance of cumulative effects assessment in Canada: Ailments and ideas for redeployment. *Environmental Management* 37: 153-161.

Hanna, K. 2009. *Environmental Impact Assessment: Practice and Participation*. 2nd edition. Oxford University Press.

Hegmann, G., C. Cocklin, R. Creasey, S. Dupuis, A. Kennedy, L. Kingsley, W. Ross., H. Spaling and D. Stalker. 1999. Cumulative effects assessment practitioners guide. Prepared for Canadian Environmental Assessment Agency.
http://www.ceaa.gc.ca/013/0001/0004/index_e.htm

Hegmann, G. and G.A (Tony) Yarranton. 2011. Alchemy to reason: Effective use of cumulative effects assessment in resource management. *Environmental impact assessment review* 31: 483-490.

International Association of Impact Assessment and Institute of Impact Assessment. 1999. Principles of environmental impact assessment best practice.
http://www.iaia.org/publicdocuments/special-publications/Principles%20of%20IA_web.pdf

Johnson, D., K. LaLonde, M. McEachern, J. Kenney, G. Mendoza, A. Buffin, and K. Rich. Improving cumulative effects assessment in Alberta: Regional strategic assessment. *Environmental Impact Assessment Review* doi:10.1016/j.eiar.2011.01.010

Learning Commons University of Guelph:
http://www.lib.uoguelph.ca/assistance/writing_services/components/documents/lit_review.pdf

Lockie, S.L. 2001. SIA in review: setting the agenda for impact assessment in the 21st Century. *Impact Assessment and Project Appraisal* 19: 277-287.

Morrison-Saunders, A., J. Arts, J. Baker and P. Caldwell. 2001. Roles and stakes in environmental impact assessment follow-up. *Impact Assessment and Project Appraisal* 19: 289-296.

Noble, B.F. 2003. Regional cumulative effects assessment: towards a strategic framework. *Research and Development Monograph Series Catalog No. En105-3/32-2005E-HTML* -66-1966-9Regional

Noble, B. 2010. Cumulative environmental effects and the tyranny of small decisions: Towards meaningful cumulative effects assessment and management. *Natural Resources & Environmental Studies Institute. Occasional Paper Series No. 8 - December 2010.* University of Northern British Columbia, Prince George, B.C., Canada.

Therivel, R. and B. Ross. 2007. Cumulative effects assessment: Does scale matter? *Environmental Impact Assessment Review* ...

Notes:

1. Written work, term assignments and other course related work may only be submitted by e-mail if prior permission to do so has been obtained from the course instructor. Submissions must come from an official University of Calgary (ucalgary) email account.

2. Academic Accommodations. Students who require an accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to their Instructor or the designated contact person in EVDS, Jennifer Taillefer (jtaillef@ucalgary.ca). Students who require an accommodation unrelated to their coursework or the requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Vice-Provost (Student Experience). For additional information on support services and accommodations for students with disabilities, visit www.ucalgary.ca/access/
3. Plagiarism - Plagiarism involves submitting or presenting work in a course as if it were the student's own work done expressly for that particular course when, in fact, it is not. Most commonly plagiarism exists when:(a) the work submitted or presented was done, in whole or in part, by an individual other than the one submitting or presenting the work (this includes having another impersonate the student or otherwise substituting the work of another for one's own in an examination or test),(b) parts of the work are taken from another source without reference to the original author,(c) the whole work (e.g., an essay) is copied from another source, and/or,(d) a student submits or presents work in one course which has also been submitted in another course(although it may be completely original with that student) without the knowledge of or prior agreement of the instructor involved. While it is recognized that scholarly work often involves reference to the ideas, data and conclusions of other scholars, intellectual honesty requires that such references be explicitly and clearly noted. Plagiarism is an extremely serious academic offence. It is recognized that clause (d) does not prevent a graduate student incorporating work previously done by him or her in a thesis. Any suspicion of plagiarism will be reported to the Dean, and dealt with as per the regulations in the University of Calgary Graduate Calendar.
4. Information regarding the Freedom of Information and Protection of Privacy Act (<http://www.ucalgary.ca/secretariat/privacy>) and how this impacts the receipt and delivery of course material
5. Emergency Evacuation/Assembly Points (<http://www.ucalgary.ca/emergencyplan/assemblypoints>)
6. Safewalk information (<http://www.ucalgary.ca/security/safewalk>)
7. Contact Info for: Student Union (<http://www.su.ucalgary.ca/page/affordability-accessibility/contact>); Graduate Student representative(<http://www.ucalgary.ca/gsa/>) and Student Ombudsman's Office (<http://www.su.ucalgary.ca/page/quality-education/academic-services/student-rights>).
8. Final grades will be reported as letter grades, with the final grade calculated according to the 4-point range. Assignment(s) will be evaluated by percentage grades, with their letter grade equivalents as shown.

Grade	Grade Point Value	4-Point Range	Percent	Description
A+	4.00	4.00	95-100	Outstanding - evaluated by instructor
A	4.00	3.85-4.00	90-94.99	Excellent - superior performance showing comprehensive understanding of the subject matter
A-	3.70	3.50-3.84	85-89.99	Very good performance
B+	3.30	3.15-3.49	80-84.99	Good performance

B	3.00	2.85-3.14	75-79.99	Satisfactory performance
B-	2.70	2.50-2.84	70-74.99	Minimum pass for students in the Faculty of Graduate Studies
C+	2.30	2.15-2.49	65-69.99	All final grades below B- are indicative of failure at the graduate level and cannot be counted toward Faculty of Graduate Studies course requirements.
C	2.00	1.85-2.14	60-64.99	
C-	1.70	1.50-1.84	55-59.99	
D+	1.30	1.15-1.49	50-54.99	
D	1.00	0.50-1.14	45-49.99	
F	0.00	0-0.49	0-44.99	

- A student who receives a "C+" or lower in any one course will be required to withdraw regardless of their grade point average (GPA) unless the program recommends otherwise. If the program permits the student to retake a failed course, the second grade will replace the initial grade in the calculation of the GPA, and both grades will appear on the transcript.