

G11703      **ESP 401W ENVIRONMENTAL IMPACT ASSESSMENT**      **4 Cr.**  
**Fall 2005**      University of Southern Maine, Gorham

Lecture: Tuesday & Thursday 9:30 - 10:45 AM, meets in 241 JMC

Laboratory: Wednesday 1:00 PM - 4:00 PM, 217 Bailey

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Office Hours: 10:15-11:15 AM T & Th, 1-2 PM W, and per arrangement

### **Introduction**

This course takes an applied perspective on environmental impact assessment, with emphasis on what is considered world-wide to be the most significant piece of environmental legislation of the 20th century -- the four-page National Environmental Policy Act (NEPA). NEPA set a cornerstone for environmental legislation, planning, and public participation. As environmental civil rights legislation it also marked a major change in the way the federal government does business. The public was finally given a mechanism to help force environmental accountability in a systematic way. This course explores how to conduct environmental assessments, systems analysis, review of environmental impact statements, and use of various regulatory review processes. We will also look at state and international aspects of environmental assessment in environmental planning.

Students in this course gain practical field experience in applying principles and theories of environmental impact assessments (EIAs) and statements of impact as required by state and federal laws. We cover all kinds of impacts, ranging from air pollution and archaeology to traffic and educational services. A primary task is to put all these impacts together, make sense of them, and use the knowledge to promote effective decision-making.

The environmental impact statement (EIS) is required by law to be the result of an interdisciplinary team effort. Therefore, in addition to individual assignments, we will form impact assessment teams with members representing each of the three aspects (law, science, and art). The laboratory sessions will be devoted primarily to the team projects. Please read this syllabus carefully, as it is basically a contract between us.

### **Text**

Bass, R.E, Herson, A. I., and Bogdan, K.M. 2001. *The NEPA Book: A step-by-step guide on how to comply with the National Environmental Policy Act.* 2<sup>nd</sup> Ed. Solano Press: Point Arena CA.

### **Suggested reference and writing guide**

Diana Hacker, 2003. *A Writer's Reference*, 5<sup>th</sup> Edition, Bedford: Boston. There is also a free web site: <http://dianahacker.com/writersref/>.

**On-line support:** This course uses Blackboard for announcements, grades, discussions, assignments, and other course support activities. All students are expected to access this site and use it.

### **Course objectives**

- 1) Understand the mechanics of a typical EIA process and EIS products.
- 2) Gain general familiarity with environmental assessment terms, issues, literature, information resources, policy, and procedures.
- 3) Be able to explain the law, science, and art of environmental assessments, including strengths and weaknesses.
- 4) Have your technical writing skills improve over the course of the semester so that you are able to create a basic environmental assessment report.
- 5) Learn how to work as a member of a team conducting environmental assessments.
- 6) Be able to maintain a professional work journal/compliance log.

My goal is to provide you with sufficient structure and resources to enable you to do an excellent job of meeting these objectives. I recognize that structure and resources are not necessarily linearly related to performance; I will strive to provide an appropriate balance for class needs without hampering student initiative. You are invited to share this goal by providing constructive feedback and involvement as the course unfolds. Please be sure to let me know if there are special circumstances that may affect your performance in this course--it is important to attend classes, keep up with the materials, and participate actively.

**Evaluation**

<i>Task</i>	<i>% overall grade</i>
EIA Project.....	50
Class & lab participation, homework.....	20
Test 1.....	10
Test 2.....	10
Lab notebook .....	10
 TOTAL	 100%

Because there is a team mandate in the EIA process, team performance will be an important element; however, there will be individual accountability in the group project. I will give you more information on how to do the projects and assignments but much of this you will decide for yourself. The laboratory period will give you time to work with your team. Use this time effectively and cooperatively. Please expect to present and discuss all work and the readings in class. Active involvement is crucial; you may find that I am just waiting for you to ask certain questions or point out certain things. Keep up in the readings; you will need to have your projects and discussions reflect an understanding of what you have read.

**Notebook:** Keep a laboratory notebook for this course to document time, activity and work-product. I will collect the notebook at the last class. Imagine the notebook as an employment work log and that your employer pays you based on a review of the notebook. The notebook must make it clear that the equivalent of at least nine hours of work per week were spent on investigation/research into the group project. The notebook is to be a handwritten original-source document to which you add addresses, sketches, plant samples—anything else that seems relevant for future reference. Write down weather conditions, interviews, other activities, facts, events from the laboratory and field investigations. The notebook should be complete enough to

hand to a colleague who could then generate a report at some future date without you as a reference.

**Tests:** Tests are based on readings, lectures, class activities and other materials covered in class (this includes student presentations and discussions, not just the stuff I say).

**Success:** Initiative, attendance, adherence to professional standards, and timely completion of work are necessary for success in this course. The assignments are designed to give you competence in the subject. Take advantage of the descriptions and outline to properly plan your activity. Unless I say it is okay to hand-write something, assume all work is to be typed (ask if you are not sure). Reports are to be typed, proofed and hand-corrected, with proper reference citations. Insert figures and tables into text where appropriate. Don't just tack them at the end or points will be lost. Papers that average more than two errors (of fact or grammar) per page will likely be graded C- or below regardless of how good the rest of the paper may be. Work that does not meet the assignment specifications will not receive a passing grade. I am willing to preview and make suggestions on papers and group projects if they are given to me sufficiently in advance of the deadline for submission. The world of EIA depends on contracts and deadlines--be sure to get the work done and submitted on time.

Be prepared to present and discuss all assignments and work products in class and by the date indicated. Mind the dates in the course outline for progress checks. Failure to meet those may adversely affect the grade for the assignment.

### **Group EIA Report**

We use real-world conditions to simulate a formal environmental assessment process. This year, we have two projects sites: Westbrook and the Plum Creek proposal for northern Maine. The students in the Westbrook cohort group will identify an urban waterfront project there and work on that. The other students are in the Plum Creek group. Each group must have at least three members. We will assess the background conditions in the field, anticipate the environmental impacts (natural, social, economic)of the project, prepare a report, and present in the class to invited guests. You choose how to organize the written report and the oral presentation. You may want to find some EISs that have been done for related projects and use them as guides. Also check the professional EIA literature in the library journals. I expect the EA report to contain aspects of a Phase I study and the outlined approach of a full EIA for an EIS:

1. A description of the project, including assumptions (size, dates, client agencies).  
Include statement of relevant laws, regulations, and rules.
2. A job plan for carrying out the assignment - a "who will do what when" plan, exactly as if you were responding to a request for a proposal (an RFP).
3. A flow chart and checklist for analyzing impacts.
4. Sketch of the project on draft paper. Examine the site and prepare a base map.
5. Data collected/documented from the field so you know what plants, animals, municipal infrastructure, and other things exist there—present in maps and tables. We will use GIS maps and laboratory equipment to examine soil, water, noise levels, etc.
6. A completed assessment form (use the form NY issues for its SEQR process:

<http://www.dec.state.ny.us/website/dcs/seqr/forms/longeaf.pdf>.

7. An analysis of the major environmental impacts of the project. Include local and regional.
8. Site visit report.
9. Draft report addressing all of the above and major categories of impact to consider, an evaluation of alternatives, maps, figures, data, references.
10. Recommendations and conclusions section
11. Professionally packaged product. One copy will be kept on file so give me two if you want comments written on it. And be sure to make portfolio copies for each group member.
12. Individual confidential memorandum in which you assess your role in the group project, and what you've learned from participating. Address the degree and quality of your participation and comment on how the team functioned.
13. Arrange for stakeholders to attend final project presentation.

### **Laboratory materials**

Equipment includes computer, scanner, digitizer, plotter, light table, and other material for basic sketching and documenting of a development site, GPS and other field measurement devices, sampling gear, and safety vests. We have surveying instruments, sound and light meters and chemical test kits. Some laboratory analysis and identification of soils, water, plants, etc., may occur in conjunction with completing projects. You decide what you need but be sure to sign in and out any equipment borrowed.

### **Course management**

Work is due on the date indicated--no late work and no makeup exams without prior approval or unless a genuine emergency condition prevented prior approval. Progress reports are also due on the date indicated in the course outline. These progress reports give us the chance to improve your writing and adjust your direction, as needed. They are a way of getting feedback on your early drafts. A late progress report will result in a grade penalty for the particular assignment. Please contact me as soon as possible if you have any questions or if you become aware of circumstances that might affect your participation in this course.

Be sure to keep up with the materials and assignments; talk to me about any problems. I do not normally give makeup exams. If you must miss class, let it be for a medical matter (not just routine appointments) or other excusable reason (e.g., avoiding death due to white-out conditions on the highway), otherwise it is zero credit for any work done or due on that day. Please let me know in advance if possible and make arrangements with another student to get notes and materials. Students who may need assistance due to a disability should also contact the Office of Support for Students with Disabilities (OSSD), 242 Luther Bonney, phone 780-4706, TTY 780-4395. OSSD can help arrange course adaptations and accommodations.

### **ESP 401 outline and schedule for Fall 2005 semester\***

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\* Changes may be made depending on the needs of the class, the learning process, the weather, confusion of the instructor, and other variables.

Date	Meeting	Topic	Lecture section assignment due on this date. Laboratory section assignments are due at the next lecture class. Be prepared to discuss assigned text and online readings in class.
Sep 6	Lecture	Intro to EIA: Law, Art, Science	
Sep 7	Lab	Lab orientation Resource and information inventory	Visit <a href="http://www.iaia.org/eialist.html">http://www.iaia.org/eialist.html</a> Read Chapter 1 Read Appendix A: <i>The National Environmental Policy Act</i> Read Appendix B: <i>CEQ NEPA regulations</i>
Sep 8	Lec.	NEPA	Visit <a href="http://www.epa.gov/compliance/nepa/">http://www.epa.gov/compliance/nepa/</a> Read Chapter 1 <b>Mini-paper:</b> Visit the US Army Corps notice of environmental decisions, choose a recent decision and describe it in one page. ( <a href="http://www.usace.army.mil/inet/functions/cw/cecwo/reg/citizen.htm">http://www.usace.army.mil/inet/functions/cw/cecwo/reg/citizen.htm</a> )
	<b>Week 2</b>		
Sep 13		Planning and Management  Deciding if NEPA applies. Finding EIS and RFPs	Visit the Federal Register at <a href="http://www.gpoaccess.gov/fr/index.html">http://www.gpoaccess.gov/fr/index.html</a> And <a href="http://www.epa.gov/fedrgstr/EPA-IMPACT/">http://www.epa.gov/fedrgstr/EPA-IMPACT/</a> <b>Mini-paper:</b> 1 page on how the Federal Register relates to EIA. Read Chapter 2 pp.25-36 <b>List</b> four places to find Requests for Proposals (RFPs) Read Appendix E: <i>CEQ guidance regarding scoping</i>
Sep 14	Lab	Defining the project	<b>Project report:</b> Job plan (who will do what and when)
Sep 15		Risk Assessment.  When NEPA doesn't apply	Visit <a href="http://ceq.eh.doe.gov/nepa/nepanet.htm">http://ceq.eh.doe.gov/nepa/nepanet.htm</a> <b>List</b> five types or categories of US EIS repositories Read Chapter 2 pp. 36-42
	<b>Week 3</b>		
Sep 20		Environmental Assessments	Visit <a href="http://www.whitehouse.gov/ceq/">http://www.whitehouse.gov/ceq/</a> <b>List</b> five facts about the CEQ. Read Chapter 3 pp. 43-58.
Sep 21	Lab	Gathering data	<b>Project report:</b> One-page description of the project
Sep 22		FONSI	Visit <a href="http://www.restore.org/Maine/overview.html">http://www.restore.org/Maine/overview.html</a> <b>Mini-paper:</b> Summarize five facts or observations about the Maine Woods proposal that would affect the Plum Creek Project or vice versa. Read Chapter 3 pp. 58-60
	<b>Week 4</b>		
Sep 27		Preparing the EIS: purpose, types, who does it, timing, public involvement.	<b>Mini-paper:</b> Write a 2-page summary of a US EIS issued within the past year. (It can be DEIS or FEIS but not EA or FONSI). This assignment must be typed and suitable for publication in a professional newsletter. Read Chapter 4 pp. 61-71. Read Appendix D: <i>Forty most asked questions</i>
Sep 28	Lab		<b>Project report:</b> A draft base map

Sep 29		Steps in the process  Matrices and networks	Read Chapter 4 pp. 71-86. <b>Mini-paper:</b> Choose one of the topics in the <i>UNEP Environmental Impact Assessment Training Resource Manual, Second Edition</i> (United Nations Environment Programme) and summarize the topic in one page. Who uses this manual and how? Hint: visit <a href="http://www.unep.ch/etu/publications/EIAMan_2edition_toc.htm">http://www.unep.ch/etu/publications/EIAMan_2edition_toc.htm</a>
	<b>Week 5</b>		<b>Project report:</b> One-page formal project update
Oct 4		Environmental Impact Assessment regulations in other countries: Discussion of reports	Read Chapter 10 <b>Paper:</b> 5-page report that compares the current NEPA CEQ regulations ( <a href="http://ceq.eh.doe.gov/nepa/regs/ceq/toc_ceq.htm">http://ceq.eh.doe.gov/nepa/regs/ceq/toc_ceq.htm</a> ) with the EIA law/regulations of another country (about 100 countries have a NEPA equivalent—here is a link to some of them: <a href="http://www.art.man.ac.uk/EIA/link.htm">http://www.art.man.ac.uk/EIA/link.htm</a> ). How are they different in form, intent, substance, theory? Which seems to be stronger and which is weaker, and in what areas? Address each subject heading. The comparison must be typed but it can include outline or tabular form. Use proper citations. Find a source in the professional literature that has compared or contrasted in some manner the other country with ours. Share the results in class and provide a one-page class <b>handout</b> .
Oct 5	Lab		<b>Project report:</b> Draft impact assessment matrix
Oct 6		Content and scope of an EIS. Indices and indicators	Read Chapter 5 pp. 87-126.  <b>List</b> five national or regional environmental indices and EQ indicators
	<b>Week 6</b>		
Oct 11		NO CLASS	No Class (October vacation)
Oct 12	Lab		<b>Project report:</b> Draft NY SEQR form adapted to project use
Oct 13		Integrating NEPA with other environmental laws	Read Chapter 6 Read Appendix F: <i>CEQ guidance regarding environmental justice</i> Read Appendix N: <i>CEQ guidance regarding Agency implementing procedures</i> <b>Mini-paper:</b> Submit two questions you think should be on the exam. Include answers and why they are good questions.
	<b>Week 7</b>		<b>Project report:</b> one-page formal project update
Oct 18		Information research	Read chapter 7
Oct 19	Lab		<b>Project report:</b> Draft list of applicable regulations and laws and summary of how they apply to the project
Oct 20		<b>Exam</b>	Prepare for exam <b>Submit</b> lab notebook for in-class review
	<b>Week 8</b>		
Oct 25		Writing reports	Visit: <a href="http://ceq.eh.doe.gov/nepa/reports/reports.htm">http://ceq.eh.doe.gov/nepa/reports/reports.htm</a> and: <a href="http://policy.nrcs.usda.gov/scripts/lpsiis.dll/H/H_190_610_B_27.htm">http://policy.nrcs.usda.gov/scripts/lpsiis.dll/H/H_190_610_B_27.htm</a> . See also Diane Hacker, <i>A Writer's Reference</i> .
Oct 26	Lab		<b>Project report:</b> Progress on impact categories and tables
Oct		Decision	Read chapter 8

27		methods	
	<b>Week 9</b>		
Nov 1		Globalization of NEPA and of impacts	Read Chapter 10 Read Appendix J: <i>CEQ guidance regarding transboundary impacts</i> Read Appendix O: <i>CEQ guidance regarding environmental effects abroad</i>
Nov 2	Lab		
Nov 3		Visual quality	Visit <a href="http://www.for.gov.bc.ca/TASB/LEGSREGS/FPC/FPCGUIDE/visual/Httpoc.htm">http://www.for.gov.bc.ca/TASB/LEGSREGS/FPC/FPCGUIDE/visual/Httpoc.htm</a> . And <a href="http://www.monroassociates.com/projects%20Visual.htm">http://www.monroassociates.com/projects%20Visual.htm</a> During class we will do a field VIA.
	<b>Week10</b>		<b>Project report:</b> One-page formal project update
Nov 8		Air quality	Visit <a href="http://www.epa.gov/airnow/">http://www.epa.gov/airnow/</a>
Nov 9	Lab		
Nov 10		Water quality	Read Appendix K: <i>CEQ guidance regarding the Clean Water Act</i> Read Appendix M: <i>CEQ guidance regarding rivers and trails</i> Read Appendix Q: <i>CEQ guidance regarding the Safe Drinking Water Act</i> Visit <a href="http://www.ngwa.org/">http://www.ngwa.org/</a> and <a href="http://www.state.me.us/dep/blwq/docgw/gwlinks.htm">http://www.state.me.us/dep/blwq/docgw/gwlinks.htm</a> Visit <a href="http://www.umaine.edu/WaterResearch/mwc/">http://www.umaine.edu/WaterResearch/mwc/</a>
	<b>Week11</b>		
Nov 15		Traffic	Visit <a href="http://transportation1.org/aashtonev/">http://transportation1.org/aashtonev/</a> and <a href="http://www.ctre.iastate.edu/pubs/traffichandbook/">http://www.ctre.iastate.edu/pubs/traffichandbook/</a>
Nov 16	Lab		<b>Project report:</b> Draft of at least one section intended for final report <b>Lab notebook inspection</b> to verify you are on the right track
Nov 17		Habitat and biodiversity	Visit: <a href="http://www.deh.gov.au/water/rivers/nrhp/protocol-2/chapter2f.html">http://www.deh.gov.au/water/rivers/nrhp/protocol-2/chapter2f.html</a> and read about habitat predictive modeling Read Appendix H: <i>CEQ guidance regarding biodiversity</i> Visit Maine Forest Service site: <a href="http://www.state.me.us/doc/mfs/mfshome.htm">http://www.state.me.us/doc/mfs/mfshome.htm</a> Visit Maine Audubon: <a href="http://www.maineaudubon.org/">http://www.maineaudubon.org/</a>
	<b>Week 12</b>		
Nov 22		Archaeological and historical	Read the third chapter in Neumann & Sanford <i>Cultural Resources Archaeology</i> , Altamira Press, 2001 or read chapter 12 in Sanford and Farley, <i>Site Plan and Development Review</i> , Putney Press, 2004. Copies are in the library
Nov 23		NO CLASS	THANKSGIVING
Nov 24		NO CLASS	VACATION
	<b>Week 13</b>		
Nov 29		Noise Energy	Read chapters 5 and 14 in Sanford and Farley, <i>Site Plan and Development Review</i> , Putney Press, 2004. Copies are in the library Visit the Union of Concerned Scientists comments on the Cape Wind project and also explore the site's other energy-related links <a href="http://www.ucsusa.org/clean_energy/renewable_energy/page.cfm?pageID=1650">http://www.ucsusa.org/clean_energy/renewable_energy/page.cfm?pageID=1650</a>
Nov	Lab		<b>Project report:</b> Drafts (understanding that these will be in varying stages) of all sections to be included in final EA report

30			
Dec 1		Economic and social	<b>Bring</b> an example or article pertaining to Cost Benefit Analysis Visit <a href="http://www.nmfs.noaa.gov/sfa/social_impact_guide.htm">http://www.nmfs.noaa.gov/sfa/social_impact_guide.htm</a>
	<b>Week 14</b>		
Dec 6		Mining and extraction	Visit <a href="http://toxics.usgs.gov/topics/rem_act/amli.html">http://toxics.usgs.gov/topics/rem_act/amli.html</a> <b>Bring</b> an article related to gravel pits, mining, or other earth extraction in NE.
Dec 7	Lab	Practice presentation, assemble draft report	<b>Project report:</b> Revised draft of at least one section intended for final report
Dec 8		NEPA effectiveness	Read Chapter 11. Read Appendix G: <i>CEQ guidance regarding cumulative effects</i> Find a printed journal article in the Gorham library that speaks to the issue of NEPA effectiveness. <b>Mini-paper:</b> Write a one-page summary of the article. Include why you selected it.
	<b>Week 15</b>		
Dec 13		Public Participation	Visit <a href="http://www.unep.ch/etu/publications/16%2085%20to%2091.pdf">http://www.unep.ch/etu/publications/16%2085%20to%2091.pdf</a> and read about conducting hearings. <b>Bring</b> a newspaper or other article pertaining to a public hearing in NE. <b>Optional:</b> Submit two questions you think should be on the exam. Include answers and why they are good questions.
Dec 14	Lab	Project presentations	<b>Group multimedia presentations</b> on projects
Dec 15		Courts, disputes & mediation. Wrap-up	Read Chapter 9 Read Appendix U <b>Lab notebooks due, EIA Written reports due</b>
Finals Week	<b>Exam</b>		Study for exam

### Letter Grade Criteria

I will sum up your performance as a percentage of 100 using the following guide in determining grades. Getting the work done on time is an important element for success in this course.

**A: Excellent work.** An impressive performance! Aggregate 90 to 100% performance on quizzes, projects (papers, presentations) and other evaluative instruments. Demonstrated high quality writing, research, analytical, and team leadership skills. Course objectives met through an outstanding documentation of learning, with no significant errors or flaws. The student has a laudable grasp of EIA in terms of theory, development, and implementation. Superior insight into EIA issues in Maine, USA, and the international assessment community. Reports and papers serve as an example of scholarship. Student shows impressive grasp of the readings and in-class discussions.

**A-: Very good work,** an average of 87-89.

**B+: Very good work,** an average of 85 to 86.

**B: Good work.** 80 to 84% on exams and other evaluative instruments. Good writing, research,

analytical skills. Good reports, well-organized and high quality oral & written presentations. No significant grammatical or other editorial weaknesses. Work shows good development of ideas and thorough support of analyses. Some aspects of student work are very good or excellent. Student has a significant and utilitarian understanding of fundamental EIA issues, concepts, and practices. Student does a quality job of briefing and presenting an EIA document or topic. Student has a good grasp of EIA basics demonstrated through meeting course objectives. Participation in class shows the student not only grasps the assigned readings and discussions but makes notable and significant contributions, insightful comments, intriguing and defensible conclusions. Very good team member.

**B-:** Acceptable work, average of 77-79.

**C+:** Acceptable work, average of 75-76

**C: Acceptable** or average. 70 to 74 on papers, presentations, exams, and other evaluative criteria. Acceptable college-level writing and analytical skills, with reasonable organization and clarity. Demonstrated a functional understanding of the fundamentals of the law, science, and art of EIA. Shown ability to research and present an EIA issue and an EIS in a creditable manner. Commented intelligently and constructively on the reading assignments. Papers have been carefully proofed, with proper citations and structure, and have no more than two errors or typos per page. Papers possess quality content in the subject matter. Good team member.

**C-: Marginal work.** 68- 69 aggregate performance on exams and other evaluations, based on a scale of 1 to 100.

**D:** Marginal work with an average of 65-67. Meets minimal requirements to not fail the course. Did not attend one or more of other students' presentations. Three or more unexcused absences. Individual assignments were marginal *or* not submitted on time.