Assessment of Student Learning Plan (ASLP): Environmental Science & Policy

May 2019

A. College, Department, Date

College	CSTH
Department	Environmental Science & Policy
Date	May 29, 2019

B. Contact Person for the Assessment Plan

Name and title Robert M. Sanford, Professor of Environmental Science & Policy

C. Degree Program

Name of Degree Program

BA Environmental Planning & Policy, BS in Environmental Science (the two are assessed together here because they overlap greatly and are offered in the same department)

D. Assessment of Student Learning: Program Assessment

Step 1: Identify the Student Learning Outcomes (SLO's)

We identify Student Learning Outcomes in our self-study and we have a general description of the two majors and the department on our website . https://usm.maine.edu/environmental-science

ESP faculty mentor students in many ways--courses, laboratory research, partnerships with external units (internships, projects, research, consulting), graduate school planning, and in development of professional careers. Our approach to education and mentoring is that these are things that are not bounded by the classroom.

ESP curriculum is designed to have students jump right into the major. From their very first course they are introduced to the concepts of community involvement, research, and collaboration. These concepts or themes underlay the processes and outcomes in each course. By the end of the freshman year, the students have enough basic science so that they can choose more advanced courses in a variety of areas. BA and BS students continue to take classes together, building community, and reflecting the interdisciplinary nature of environmental science. Research Methods (ESP 280), for example, is a 4-credit lecture and laboratory sophomore course in which the students learn social science and physical/natural science research approaches, techniques, and tools. They collaborate on research that must meet the level of being presentable at USM's Thinking Matters. At the junior year, the students are more likely to differentiate on the basis of their major, but continue to come together for courses in environmental regulations, energy, and other areas. An internship gives them an opportunity to further explore an area of particular interest or to simply gain some practical workplace connections and experience. The internship program is a 3 credit course run by an internship coordinator/instructor. Presentation of internships on Internship Night (held every semester) is another way for advanced students to pass along their experience to newer students and to share among themselves and the faculty. The capstone course (ESP 401) launches the student into professional practice for their major. We have added the practice of inviting alumni to final presentations of the capstone. Within this overall framework lie the individual outcomes for each course in the majors. The checklist below is revised annually to best serve the needs of the outcome assessments. The table below the checklist shows outcomes from the syllabi for department courses.

DEPARTMENT OF ENVIRONMENTAL SCIENCE AND POLICY

2018-2019 Curriculum Checklist

NAME _____ **STUDENT ID#**_____

FACULTY ADVISOR _____**Professional Adviser**_____ **Catalog Year:** _____ **BA or BS**

Minimum proficiency requirements for college-level courses

Writing proficiency _____
Mathematics Proficiency _____

General Education (core courses)

Entry Year Experience (EYE courses) _____
College Writing (ENG 100) _____
Quantitative Reasoning (MAT 120 is required for EPP) _____

Creative Expression (such as MUS 110, ARH 101) _____
Cultural Interpretation (such as ARH 111, ENG 140, MUS 100, PHI 1XX) _____

Science Exploration (usually ESP 101/102 or ESP 125/126) _____
Socio-Cultural Analysis (recommend ECO 102) _____

Ethical Inquiry (recommend ESP 200, ESP 212, ESP 308, GEO 209) _____
Diversity (may overlap with another category/requirement except International) _____

International (recommend ESP 308) _____

3 Thematic Cluster courses ___**or** 3 upper div. Non-ESP ____ _____

or minor* _____

Capstone (ESP 401) _____

Verification student has obtained the required **120** university credits _____

Department of Environmental Science and Policy major requirements				
BS: CHY 113 ____ CHY 114 ____ CHY 115 ____ CHY 116 ____	**BS/BA:** ESP 101 ____ ESP 102 ____ ESP 125 ____ ESP 126 ____	**BS/BA:** ESP 150 ____ ESP 197 ____ ESP 203 ____ ESP 207 ____	**BS/BA:** ESP 280 ____ ESP 340 ____ ESP 400 ____ ESP 401 ____	**BS/BA:** 1 Tools course: ____ Examples include: GEO 108, GEO 208, GEO 308, GEO 340, CAD, foreign language, MAT 120 (only for BS ES)

BA in Environmental Planning and Policy	**BS in Environmental Science**	
CHY 1XX ____ (lec) MAT 120 ____ ESP 220 ____ ESP 305 ____ ESP 375 ____ ESP 417 ____ ESP 421 ____ choose ESP 200 ____ *OR* GEO 209 ____ choose ESP 326 ------- *OR* ESP 327 ------- **Electives: (**2 ESP classes 200 or higher) 1:_____ 2:_____	CHY 233 ____ *OR* CHY 251/252____ MAT 152 ____ and either PHY 111 ____ PHY 114 ____ *OR* BIO 105/106 ___ ESP 360 ____ ESP 260 ____ *OR* ESP 412 or 413 ____ **Electives:** Choose 3 ESP Science classes 200 or higher 1:_____ 2:_____ 3:_____	**Common electives:** ESP/GEO 108 ___ ESP/PHI 212 ___ ESP/REC 223 ___ ESP 299 ___ ESP 303 ___ ESP 308 ___ ESP 341 ___ ESP 470 ___ *****Recommended Minors include: __Applied Energy __Environmental Science (BA only) __Environmental Policy (BS only) __Environmental Sustainability __Chemistry (BS) __Economics (BA) __Biology (BS) __Nature-based Tourism __Political Science (BA) __Honors

Environmental science courses and their primary outcomes for student learning. The requirements for BA EPP and for BS ES and core can be document and tracked by use of the checklist above.

Freshmen level

Entering freshmen are immediately immersed in the major, with the opportunity to do community service, and group activities in courses and outside of courses. From the freshman level onward, students are provided opportunity to participate in research and to present the results at "Thinking Matters" (USM student research symposium), "Civic Matters," Maine Water Conference, and other venues. We expect entering students to be able to do basic math, such as multiply fractions and operate with exponentials. We expect students to also have basic grammatical skills and write complex sentences. We also expect the student to have some library and internet research skills so they can do the type of literature review and background research necessary for success in courses in the major.

Course	Outcome
ESP 101 Fundamentals of Environmental Science (Lecture)	1. Meet course science requirement 2. Introduce the major—basic environmental literacy
ESP 102 Fundamentals of Environmental Science (Laboratory)	1. Be able to design and carry out a science experiment 2. Be able to gather environmental information from the field 3. Be able to write a professional environmental report on a lab experiment or field investigation.
ESP 108/GEO 108 Introduction to ArcGIS	Basic familiarity with a GIS mapping and analysis tool
ESP 150 Field Immersion	1. Be able to use a map and compass in the field 2. Be able to use a dichotomous key to identify a tree or water plant. 3. Be able to work as a group in the field 4. Be able to use a canoe to take water samples 5. Know your advisor and the Student Success Center
ESP 125 Introduction to Environmental Ecology (Lecture)	1. Be able to describe interactions of organisms with their environment from an evolutionary and physiological perspective. 2. Be able to demonstrate fundamental understanding of ecological principles and concepts as they relate environmental science, Systems Ecology, Population Ecology, Landscape Ecology, and Urban & Industrial Ecology. 3. Write a literature review on a topic in environmental ecology.
ESP 126 Introduction to Environmental Ecology (Lab)	Be able to demonstrate knowledge, skills, and abilities to conduct basic ecological research and interpret ecological data including: 1. Demonstrate a working knowledge of descriptive statistics and their use in ecological studies. 2. Write a formal scientific report. 3. Characterize habitat and community types and assign a rarity ranking. 4. Estimate population density and characterize distribution 5. Calculate community diversity using Shannon and Simpson's indices 6. Measure tolerance and toxicity in daphnia 7. Conduct preliminary biomonitoring analysis of heavy metals using lichen

	8. Measure community diversity of macro fauna in soils and leaf litter. 9. Collect and interpret water quality data using common field technologies employed by ecologists and environmental scientists.
ESP 131 Northern Forest Canoe Trail	Also serves as an Entry Year Experience course (EYE). Goal is orientation for college-level research and independent learning. This course was developed for ex-military and others seeking a transition summer course to college, but is suitable to all independently motivated learners.
ESP 150 Field Immersion	This course is one long, intensive weekend at a camp, and the rest is online documentation of attending a series of environmental events. The course is intended to build community and introduce basic field skills (orienteering, field reconnaissance, plant identification, canoeing).
ESP 197 Research Skills Lab (1 credit) Taught by library personnel	10-week, lab style course designed to develop students' study and research skills. Topics include literature searching, website evaluation, peer review, critical thinking, finding articles and books, plagiarism, proper citation, primary and secondary sources, and the writing process. Final project is a written literature review on a selected environmental topic. Prepares students for ESP 203.
ESP 199 Roof Top Energy	This experimental course introduced renewable energy concepts and allowed DES to try out a course for potential offering in the future energy curricula
ESP 199 Environmental Entomology (reinvented later as ESP 350)	This experimental course introduced entomology from an ecosystem, applied perspective that addressed the practicality of invasive species management. It formed the basis for the future offering of entomology as a senior seminar or other regular course offering
ESP 199 Quantitative Reasoning and the Environment	This experimental course was added to improve basic mathematical and scientific literacy for freshmen. We offered it for the first time in Spring of 2018.

Sophomore level

At the sophomore level students continue content-based instruction in the major. Students are expected to be able to do guided research and receive course instruction to help them meet this expectation. By now students should be able to apply the scientific method to environmental problems and write up and present the results. Students should have the basic mathematics, science, and planning/policy work preparatory for upper-level courses.

Course	Outcome
ESP 200 Environmental Planning	1. Meets Core ethical Inquiry requirement 2. first planning course—basic terminology. Ability to write an environmental plan for managing a tract of land. 3. Ability to use comprehensive planning, zoning, and regulations to evaluate local planning decisions.
ESP 203 Environmental Communication	Students will be able to: *Demonstrate* how basic environmental communication theory and its application shape the definition of environmental problems. *Identify* the influence of scientific, socio-economic, and political factors and the mass media in shaping the social construction of environmental problems. *Explain* how communication is used to persuade/dissuade audiences regarding environment problems and how the environment is used to manipulate audience perception.

	Conduct basic social science research within Environmental Communication to study an environmental problem of interest. *Develop* a news literacy.
ESP 207/GEO 207 Atmosphere: Science, Climate, and Change (Cross-listed from Geosciences Department)	1. Become a capable consumer of scientific information about climate and atmosphere 2. Be able to participate in effective decision-making in government and public policy on environmental change.
ESP 212/PHI 212 Environmental Ethics (Cross-listed from Philosophy department)	This course originates in the Philosophy department. It attempts to provide a new cosmological model for adjudicating between conflicting rights and duties. Issues to be discussed include animal rights, environmental protection, and ecological harmony.
ESP 220 Introduction to Environmental Policy	Upon successful completion of this course, students will be able to: *Define* an environmental problem. *Model* the symptoms and causes of an environmental problem. *Demonstrate* competency in conducting policy research to accurately define and solve an environmental problem using empirical data. *Develop* the ability to critically analyze the formulation, construction, development, and implementation of environmental policies.
ESP 250 Soils & Land Use	1. Describe soils in the field 2. Analyze soils for basic properties 3. read a soils map & use data to formulate land use recommendations
ESP 260 Soil and Water Conservation Engineering	1. To familiarize the student with techniques of estimation, remediation, and design used in soil and water conservation. 2. Provide the student with a broad appreciation of the natural forces at work and man's effect in the context of historical and geographical determinates. 3. Complete a group design project to scale; using a maximum of two-foot contours, geo-referenced with all reasonable mapping symbols, using predictive means design remediation with Best Management Practices (BMP's) that meet state and local conservation standards.
ESP 270 Solid Waste Planning and Policy	• *Demonstrate* understanding of the integrated management strategy for solid waste • *Develop* a plan to manage solid waste in accordance with the integrated solid waste management strategy • *Demonstrate* policy and planning competency for managing solid waste by incorporating the waste management hierarchy
ESP 275 Energy Use and Societal Adaptation (An online course)	• an understanding of traditional, modern, and future energy sources • an understanding of energy consumption sectors in modern economies • an understanding of energy technologies and environmental and social development impacts • an acquired knowledge of functional and useful skills necessary for processing energy statistics and reports
ESP 280 Research and Analytical Methods	*1. Define* an environmental problem suitable for research. *2. Construct* a testable hypothesis/research question. *3. Prepare* a literature review on a selected environmental problem *4. Design* a valid method to test a hypothesis or answer a research question.

	5. Conduct research using the scientific method to test a hypothesis or answer a research question. *6. Develop a* research sufficient literacy to understand and explain peer-reviewed research articles. *7. Demonstrate* basic competency with lab and field-based analytical methods. *8. Poster*: Be able to create a conference-ready poster or scientific paper on an environmental research topic.

Junior level

By the junior level we expect students to have enough basic skills to begin functioning as entry-level environmental professionals (which is what they might be doing upon completion of a 2-year degree), reflecting the applied, task-oriented nature of ESP. The chemistry requirement for the BS should have been completed by now, leaving those students prepared for advanced science instruction. This year is when they are encouraged to do their internship and continue work on career planning. Many juniors already have a year or more experience working in a professor's laboratory. An internship is the opportunity to put into practice some basic environmental knowledge and skills obtained in class, and gauge its influence on potential careers of interest.

Course	Outcome
ESP 303 Wetlands Ecology	At the end of this course you should be able to: 1. Understand the fundamental and interdependent roles of hydrology, biology and biochemical processes in shaping wetlands 2. Distinguish wetlands from other land forms in terms of their ecosystem function 3. Describe wetland types and classifications used throughout the world 4. Speak intelligently about Maine wetlands and wetland issues, such as Maine DOT's new wetlands mitigation bank and recent wetlands legislation 5. Relate a basic understanding of the art and science of wetland restoration and creation 6. Find and use online wetlands resources
ESP 305 Community Plan Workshop (An online course)	Be able to design and carry out an independent environmental planning project that meets a public need. Examples include a revised land use plan, energy plan, playground design, housing project, new road, public park, nature trail. Be able to participate effectively in an online peer community.
ESP 308 Global Environmental Problems and Sustainability	*1. Summarize* the major global environmental problems and their impact on a sustainable future. *2. Compare* the traditional approach to solving environmental problems to the sustainability approach. *3. Select* the appropriate tools of sustainability to solve a problem. *4. Evaluate* the commitment of other nations toward a goal of sustainability. *5. Design* a project to promote sustainability on the USM Gorham Campus, which encompasses the three pillars of sustainability.
ESP 311 Energy Efficiency I	The student will master basic principles of energy efficiency
ESP 313 Renewable Energy Technologies	Conduct realistic experiments in thermal imaging, particulate sampling, electricity consumption auditing. working with various renewable

	energy technologies, including solar PV cells, wind turbines, biofuels, hydro turbines, and geothermal heating systems. Students work in teams to analyze data and evaluate technologies under different conditions. Students are expected to analyze data, draw conclusions, and make relevant recommendations.
ESP 326/ECO 326 Environmental Economics (Cross-listed from the Economics department)	Be able to apply economic theory to current environmental problems.
ESP 327/ECO 327 Natural Resource Economics Cross-listed from the Economics department)	This course considers the economic aspects of natural resource management and use, including the economically sustainable management of fisheries, forests, water resources, and biodiversity, with applications to Maine and beyond. Students will investigate the implications of public policy responses such as regulations, marketable permits, and tax incentives. Prerequisite: ECO 102
ESP 340 Environmental Regulations (An online course)	*1. Outline* the major regulatory requirements for environmental quality and public health. *2. Demonstrate* competency in research by locating and citing state and federal rules and regulations. *3. Develop* a written analysis of the application of a federal and/or state rule or regulation to a particular circumstance.
ESP 341 Limnology	• Understand properties of water and how they affect aquatic organisms • Demonstrate the process of lake stratification • Illustrate basic nutrient cycling in lakes • Identify common freshwater aquatic organisms (plants, insects, fish, zooplankton) • Explain and assess the basic components of lake and stream food webs • Understand feedbacks between physical, chemical and biological components • Assess lake trophic status based on lake characteristics • Design, conduct, analyze and report on an aquatic-based study • Identify important sources of information for aquatic systems
ESP 350 Environmental Entomology	This course covers fundamental topics in entomology including environmental physiology, arthropod borne disease, biological indicators and sentinel species, invasive species, and integrated pest management (IPM). It includes topics in forest and urban entomology. Students gain experience in monitoring insect diversity, estimating populations, chemical ecology, and measuring physiological adaptations. Environmental entomology topics are applicable to a wide range of disciplines including biology, chemistry, environmental science, medicine, veterinary sciences, ecology, forensic science, and general science education. Prerequisite: C- or better in BIO 107 or ESP 125
ESP 360 Water Quality Assessment and Control	• Understand the connections between water quality and aquatic ecosystem function • Understand the requirements of the Clean Water Act and how they apply to water districts and water users • Understand how the Maine Dept of Environmental Protection regulates and monitors water quality • Understand the chemistry and biological significance behind commonly used water quality tests

	• Practice good laboratory and field techniques, including quality control and record keeping • Practice thinking! Share data with public.
ESP 375 Environmental Risk Assessment and Management	1. *Comprehend* and use the recognized framework for assessing risk of exposure to pollutants and contaminants for human health. 2. *Prepare* a quantitative human health risk assessment using Microsoft Excel. 3. *Demonstrate* basic competency with regards to understanding risk from natural hazards. 4. *Demonstrate* ability to assess community public health risks from environmental exposure. 5. *Demonstrate* understanding of the scientific, political, social, ethical, and economic dimensions of perceiving, communicating, and managing risk.
ESP 389 Teaching Practicum	1. Be able to assist in the delivery of an environmental science laboratory or lecture course (a one-on-one mentored experience between the professor and the student enrolled in ESP 389) 2. be able to develop an assessment activity for an environmental science course 3. obtain skills and abilities that provide an advantage in obtaining a graduate teaching assistantship or a teaching position.

Senior level

Students take a capstone course, ESP 401, in which they apply various previous courses to a large group project with multiple facets of content, writing, map and field work, analysis, & synthesis. At the senior level the student has met most of the major requirements and is able to choose some advance electives in environmental areas of interest. The student may also be completing the general education (Core) requirements, since we encourage doing that throughout the undergraduate career rather than just in the early years. When we obtain sufficient faculty resources, we may reinstate our senior seminar ESP 475, which for now remains a vehicle to try out new course topics and concepts. By the end of the senior year, the student should be ready to enter the work world or graduate study as an environmental professional. He or she should be able to frame an environmental problem and outline a study to address the problem. The student should be able to collect and analyze environmental data from the field. The student should be able to write a comprehensive environmental report on an environmental assessment, policy, or research project, with a fully referenced literature review.

Course	Outcome
ESP 400 Internship	Complete a professional experience related to a student's chosen option within the major. In addition to satisfactory work experience, provide an oral presentation and written report.
ESP 401 Environmental Impact Assessment & Lab	Be able to explain the EIA process and use it to promote more effective environmental projects. Be able to work as a team in preparing an environmental assessment and communicating the results orally and in writing a Phase I report.
ESP 403 Bioremediation and Phytoremediation	be able to discuss the fates of contaminants found in surface and subsurface environments, and make decisions regarding proper remediation techniques. (Offered occasionally)
ESP 412 Field Ecosystem	Course Learning Objectives are: 1. Describe and interpret the consequences of the flow of materials and energy through organisms and the physical environment. 2. Manipulate, graph and interpret large ecological data sets.

	3. View and analyze problems from a systems thinking perspective
ESP 413 Forest Ecosystems	1. Understand & describe the forest as an ecosystem 2. gain practical experience in collecting forest ecosystem data & present in forest management plan
ESP 417 Site Planning and Assessment	Practical experience in creating a site plan, and designing solutions one or more particular site problems such as drainage, parking, lighting, landscaping.
ESP 421 Natural Resource Policy	*Define* a natural resource problem. *Model* the symptoms and causes of a natural resource problem. *Demonstrate* competency in conducting policy research to accurately define and solve a natural recourse problem using empirical data. *Develop* the ability to critically analyze the formulation, construction, development, and implementation of natural resource policies.
ESP 445 Environmental Education and Interpretation	1. Be able to explain and design lessons demonstrating an understanding of coastal environmental education and interpretation principles and concepts. 2. The student will be able to use dichotomous keys and field guides to identify flora and fauna common to the coastal environments of Southern Maine. 3. The student will demonstrate an understanding of how basic ecological and environmental science concepts apply to the creation and teaching of environmental education materials and their connection to the Maine Learning Results (http://www.maine.gov/education/lres/). 4. The student will be able to design technology enhanced environmental activities and curriculum that provide equitable learning opportunities for all students.
ESP 450 Research Practicum	Gain practical, hands-on skills by participating in an on-going faculty research project.
ESP 470 Solid Waste Planning and Policy	An examination of traditional and innovative policy approaches involved in managing municipal solid waste. Includes identifying capacity needs, siting locations, transportation, and economic needs for management strategies (e.g., recycling, reuse, composting). Students will work on a local solid waste planning project to identify cost-effective approaches to reducing land-disposal. Prerequisites: College Writing and Quantitative Reasoning.
ESP 475 Topics in Environmental Science/Senior Seminar	• Learn to appreciate and integrate often competing approaches to environmental science. • Enhance your abilities in critical and creative thinking, communication, and collaboration • Hear from a wide variety of environmental leaders who will share their own perspective –from their own unique life stories on environmental leadership. • How to conduct research through the case study approach Career Skills Development • Prepare a professional resume • Write a cover letter in response to a specific job advertisement • Prepare for and participate in a mock interview
ESP 489 Grant Writing Seminar	This course is for juniors and seniors in all disciplines who plan on entering professional careers requiring knowledge of grant writing to successfully submit competitive corporate and foundation proposals, and state and federal grant applications. Developing effective grant writing skills offers a competitive edge for job-seekers across many disciplines and is essential to acquiring competitive funding from

	government agencies and private foundations. Writing a successful grant proposal is a blend of art and science. It requires basic know-how, content knowledge, writing proficiency, strong research skills, creativity, organizational ability, patience, and a great deal of luck. This course provides the background necessary to develop a competitive funding proposal

Post graduate

ESP has implemented several graduate course versions of undergraduate offerings in environmental education, environmental policy, and entomology (cross-listed with Biology). This was originally done in support of a 4:1 program with Muskie for a Master's degree in public policy. The post-graduate experience is intended to facilitate a life-long connection to learning, to the environment, and to the department. ESP certificate programs apply; they are designed to serve both undergraduates and continuing education students. These programs focus on practical, marketable skills. Students in our certificate programs include retired military officers and people with master's degrees. Graduates have been hired to help teach introductory courses in the department (in 2019 this included, Maggie Welch and Chelsea Malacara). Graduates also receive opportunities to guest-lecture, and to attend department events such as Career Night, and our annual ESP banquet.

ESP also has several certificate programs available to graduates and others who wish to focus in specific environmental areas.

Step 2: Assessment Methods Selected and Implemented

ESP does not have a formal Student Learning Outcomes Assessment Plan but it uses many components of one, including periodic tracking of graduate employment—perhaps an ultimate measure of success in and of itself. Our summative and formative assessments regularly include in-class activities, written and on-line quizzes, learning portfolios, final projects, oral presentations, two-minute questions, reflective memoranda, instructor observation, and group and individual reports.

We use the USM course evaluation forms and were early adopters of electronic course evaluations. At the discretion of individual faculty, we augment course evaluations with Student Assessment of Learning Gains (SALG, http://www.salgsite.org/). SALG is useful for formative and summative assessments. It is a free, on-line assessment tool of student perceptions of science learning. Faculty also use on-line surveys, portfolios, concept maps, reflection papers, minute papers, peer class observations, and a variety of other techniques.

Assessment and evaluation also occurs through our curriculum design. For example, the senior capstone course, environmental impact assessment (ESP 401) acts as an assessment of the student's ability to put together what he or she has learned in previous courses and apply that to a group project. They choose their area of emphasis and they choose their project. Each of the courses in the matrix provided in Step 1 builds student knowledge, skills, and abilities towards the outcomes or proficiencies for the respective academic ranking of freshman, sophomore, junior, and senior in the major.

In our response for Step 3 we address service learning and civic engagement, with example student assignment sand projects that document or assess achievements in those areas.

Step 3: Using the Assessment results to Improve Student Learning

We address service learning and civic engagement, with example student assignment sand projects that document or assess achievements in those areas.

Based upon these assessment results, we hold periodic curriculum review workshops to evaluate our curriculum, goals for each student year, and decide upon changes. We created an ESP 389 Teaching Practicum course to nurture student leadership abilities and to help prepare students to be competitive in obtaining graduate teaching assistantships. This provides a mentored hand-on experience to help a student explore the role of teaching in the discipline, and leadership among their peers. We also participate in the Learning Assistant program.

After our 2013 self-study, we revised our course syllabi to ensure that all syllabi have concrete learning objectives that are measureable and assessable.

E.Course Assessment Activities: *Is your program able to report any assessment-related activities at the Course-Level… (i.e. created grading rubrics to use in required courses, examined student progress in entry-level courses, developed a new course, etc)? Please briefly explain any assessment projects.*

All majors complete an introductory orientation course, ESP 150 Field Immersion. The entire department faculty participates in delivering it, with one taking the lead as the instructor of record. We also hire two advanced students as teaching assistants, modeling our value for student learning. This course occurs in September – one long weekend, with an online component, and all freshmen and transfers take it. The course has two main objectives: set up the basis for building community and provide basic skill-sets (compass reading, tree identification, Map/GPS usage, canoe use) for out-door environmental education. After each offering, we debrief and decide what could be done to improve it. This debriefing is informed by the results of a survey given to the students at the end of the field session.

F. Community Engagement Activities in your departmental curriculum:

Environmental Science is an applied field that takes a problem-solving approach. This means students must learn out to collect data from the field and work with communities. All environmental problems have a social or cultural aspect to them. We invite members of the public and the environmental professional community to attend student internship presentations (ESP 400) and capstone presentations (ESP 401). Similar invitations commonly occur for other courses such as ESP 260 Soil & Water Conservation Engineering, ESP 360 Water Quality & Control and ESP 417 Site Planning & Design.

Community Engagement Activity	*Included*	*Required/Optional*	
Student Research (related to a community-based problem)	_x__	**R**	O
Student-Faculty Community Research Project	_x__	R	**O**
Internship, or a Field Experience	__x_	**R**	O
Independent Study (community-related project)	_x__	R	**O**
Capstone Course (community-related project)	_x__	**R**	O
Service-Learning (course-based) *	_x__	R	**O**
Study Abroad, or an International Program	___	R	**O**
Interdisciplinary Collaborative Project (community related)	_x__	R	**O**
Student Leadership Activities (related to a team project)	_x__	R	**O**
Students/Faculty Community Leadership (advisory boards, committees, conference presentations)	_x__	R	**O**

Other Activities (not mentioned above):

The department sponsors annual Maine Science Bowl, Science Olympiad, Southern Maine Children's Water Festival, and other events that give many opportunities for community engagement and that bring hundreds of k-12 students onto campus every year. Faculty, staff and students participate together in hosting these events. This models department values, citizen engagement, and active learning.

* So many ESP courses have service learning components that it is probably not possible to get an ESP degree without doing service learning of some kind or another

Representative sample of ESP courses that regularly use service learning and civic engagement		
Course	**Summary**	**Sample Projects**
ENTRY		
ESP 101 Fundamentals of Environmental Science	10 to 20% of grade is based on an environmental awareness or action project	Cape Elizabeth beach cleanup. Stormwater design for EPA Rainworks contest
ESP 125/125 Environmental Ecology & lab	Individual assignments allow students to select civic partner "client"	Environmental report. Ecological study. Biodiversity assessment.
MID Level		
ESP 203 Environmental Communication	Research on knowledge of environmental issue	Statewide survey on mercury
ESP 200 Environmental Planning	Between 15% and 40% grade is an environmental management plan provided to an agency, municipality, or non-government organization.	Piping Plover nesting area management plan
ESP 250 Soil and Land Use	Major project	Soil assessment for community garden
ESP 260 Soil and Water Conservation Engineering	Major project	Stormwater management plan Erosion control plan
ESP 270 Solid Waste Planning and Policy	Project on a local solid waste problem	Municipal e-waste management plan
ESP 280 Research & Analytical Methods	Students learn how to design and carry out a research project. Thinking Matters-worthy project	Leaf decomposition study in Sebago Lake watershed
UPPER level		
ESP 303 Wetlands Ecology	40% grade in field project	Host middle school students
ESP 305 Community Planning	90% of grade	Community garden plan
ESP 308 Environmental Sustainability and Management	Students must complete a community-based sustainability project	Recycling plan for local school
ESP 360 Water Quality Assessment and Control	30% grade on local research into a water quality issue. Often a public stakeholder as "client"	Community Water Quality Partners

ESP 400 Internship	120 hour field experience for three credits. Many ESP internships embed students into a municipality, agency or non-government organization for service learning.	Scarborough Marsh tour guide
ESP 401 Environmental Impact Assessment	60% or more of course grade is an environmental assessment report. The “client” is a municipality, government agency or non-government organization.	Solar power or wind turbine municipal project site assessment
ESP 411 Forest Ecology	Government or NGO or private “client” selected who can benefit from a forest management plan.	Forest Management Plan
ESP 412 Field Ecosystem/Field Ecology	Environmental study for an NGO or municipal entity	environmental management plan
ESP 417 Site Planning and Assessment	Major project is usually a civic project development plan or proposal undertaken as a service to a municipality or NGO. Public invitation to final projects.	Park design layout Urban brownfield redevelopment plan