



## **School of Environmental Studies Undergraduate Student Handbook**

Version 1.6: January 2010

Welcome to the School of Environmental Studies Undergraduate Student Handbook. The purpose of this handbook is to provide information about the School and its programmes. Hopefully, these pages will provide answers to some, if not all, of your questions as a student or potential student of Environmental Studies (ES) at the University of Victoria.

Our aim is to provide as much useful and accurate information as possible in this handbook. Please let us know what improvements can be made to future versions. Thank you.

Note that all of the information contained here is accurate to the best of our knowledge. In the case of any discrepancies, however, the University of Victoria Calendar (<http://web.uvic.ca/calendar>) shall prevail as the official version.

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**1 DIRECTOR'S MESSAGE**

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Welcome to the School of Environmental Studies at the University of Victoria. We hope you find this handbook helpful in choosing a programme of study or guiding your way through the intricacies of our undergraduate offerings.

We are a small school with aspirations to be among the best of our kind in Canada. Our established research strengths in ethnoecology, political ecology, and ecological restoration constitute a distinctive fusion of interests. We emphasize small classes, interdisciplinary study, courses that challenge our basic beliefs and attitudes, and practical action in the community. We will have done our best if you graduate from the School with the capacity to see the world differently and from multiple perspectives, solve difficult ecological design problems, appreciate the combination of theory and practice, and are in possession of a richer imagination and stronger sense of hope.

Dr. Eric Higgs

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## 2 INTRODUCTION

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### 2.1. WHAT IS ENVIRONMENTAL STUDIES?

Environmental Studies is an academic field that connects key concepts from many disciplines in an environmental context, providing a framework for the study of the relationships between human cultures and their environments. The field recognizes that an understanding of the interactions between many ecological and social factors at multiple scales is critical to society's response to environmental change. Whether these interactions are focused within a particular site or region, whether they are global in scope, or whether they are inter or trans -personal, they require comprehension and understanding as one looks to the future.

### 2.2. WHY LEARN ABOUT ENVIRONMENTAL STUDIES?

Awareness of environmental issues, concern about environmental degradation and conflict, and expanding professional opportunities have created unprecedented demand for the programme.

Human relationships with the environment are complex and diverse. Understanding our place in the global ecosystem and alleviating the environmental problems resulting from human activities requires integrating many types of knowledge from diverse academic fields (Biology, Economics, Political Science, etc.). Environmental Studies provides such integration.

The global focus on sustainability and conservation of natural resources has increasingly driven policy decisions in government and industry, which also contribute to the demand in post-secondary education in environmental studies. As the environment industry grows, so too does the need for higher education at the management and research and development levels. The Canadian Council for Human Resources in the Environment Industry (CCHREI) recently released the results of a 5-year study tracking employment opportunities offered on electronic job boards, the Globe and Mail, Calgary Herald, and Canada Employment Weekly (a publication that lists job opportunities from several major Canadian newspapers). Of the 1,663 environmental jobs advertised, 71 percent required at least one university degree.<sup>1</sup>

### 2.3. ENVIRONMENTAL STUDIES AT THE UNIVERSITY OF VICTORIA

The School of Environmental Studies considers community and regionally based research within British Columbia a major emphasis. Work with provincial and federal agencies, First Nations, and multi-stakeholder commissions is regarded as integral to both the mission and scholarly activities of the School. Particular emphasis is placed on understanding the relationship of aboriginal communities, rural and urban dwellers and society to the lands, waters and coastlines of British Columbia.

The School of Environmental Studies, through its faculty, graduate students, undergraduate students and affiliates, has a strong programme of interdisciplinary research covering a broad spectrum of topics. In addition, the associated Diploma Programme in Restoration of Natural Systems provides

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<sup>1</sup> As reported in *Realm: Creating Work You Want*, Issue 4, Vol. 1999, p. 19.

important research opportunities for students, particularly in relation to the practicum required for the Diploma.

Although much of the research in the School focuses on British Columbia, our work has links to other regions and also has national and global applications. There are three established research areas in the School: Political Ecology, Ethnoecology, and Ecological Restoration.

#### **2.4. PROGRAMME HISTORY -- A LONG TRADITION**

In 1974, the Environmental Studies Programme was founded in the University of Victoria as a response to student demands for new and more appropriate means of addressing environmental problems and issues, in particular for interdisciplinary environmental learning. It was one of the first undergraduate environmental programmes in Western Canada, offering the notation "with Environmental Studies" for both B.A. and B.Sc. degrees. From its inception, the School has been interdisciplinary. Under the guidance of dedicated faculty such as Marc Bell of the Biology Department, Alan Dregson from Philosophy, and Bill Ross of Geography, the programme grew slowly with a number of courses and initiatives offered by cooperating departments. It has evolved and developed into a [relatively] large programme, offering 31 third and fourth year undergraduate courses, and drawing students from diverse disciplines and backgrounds.

In 1980-81 there were 23 students registered in the School. In 1988-89, the School began offering an Environmental Studies major (a double major -Environmental Studies combined with a second area of study) and Environmental Studies as a minor (with a major in another discipline). From two graduates that year (both majors) the School evolved to 81 major and minor graduates in June 1996. By 1998 there were 249 degree programs filed by major and minor students, with the School offering 39 courses with 1400 total student enrolments. The School has now become the largest established undergraduate environmental studies unit in British Columbia. Many students come from other parts of British Columbia across Canada, and beyond expressly to undertake Environmental Studies at the University of Victoria.

In 1987, Paul West, a faculty member in Chemistry, was appointed Director of the Environmental Studies Programme, position he held until 2001. In 1997 the Environmental Studies Programme became the School of Environmental Studies, reflecting that fact that the School is an interdisciplinary department within the Faculty of Social Sciences. In 1988-89, the first full-time faculty member, Duncan Taylor, was appointed.

In 1991 the second full-time faculty member, Nancy Turner, was appointed and in 1993, Paul West was appointed Associate Professor in Environmental Studies, reflecting a stronger commitment by the University of Victoria to Environmental Studies.

In 1995, the School of Environmental Studies was awarded, jointly with the Faculty of Law, one of only five Environmental Eco-Research Chairs that were established in Canada, the only such chair in Canada with a permanent endowment. Held by Professor Michael M'Gonigle, the Chair added momentum to a growing number of Masters and Doctoral students (interdisciplinary and by special arrangement) being advised or co-advised by School of Environmental Studies faculty members. In 2001 the Eco-Research Chair evolved into the POLIS Project, an ambitious new and innovative community-based research project focussing on environmental law and ecological governance. Also

in 1995 Wendy Wickwire was appointed as a part-time faculty member in the School of Environmental Studies, as well as in the History Department.

In 1996, in co-operation with Continuing Studies, the School of Environmental Studies established diploma and certificate programmes in Restoration of Natural Systems (Environmental Restoration), offering third and fourth year credit courses. The diploma requires 18 units of course work (full or part-time), and has initiated a further 20 third-year level credit courses that are also available to SES students. The certificate requires 12 units (8 courses) and is specifically designed for professionals with previous field experience in environmental areas, although many ES students also take advantage of the program.

In January 2002, Dr. Eric Higgs, formerly from the Department of Anthropology, University of Alberta, was appointed to a five-year term as the Director of the School of Environmental Studies. Over the next few years, Dr. John Volpe was appointed to the School, and Paul West retired and was replaced by Dr. Kara Shaw. With their arrival, the School now includes six full-time and two part-time faculty members. In addition, Dr. Val Schaefer, Academic Director of the Restoration of Natural Systems Program, is a full participant in the School's activities. Three support staff—Karolyn Jones, Anne Bowen and Elaine Hopkins—are responsible for keeping the School organized and running smoothly.

In 2003 the School undertook its first systematic curriculum review. Building on the School's Strategic Plan, we developed a new curriculum that emphasizes our strengths in the areas of Political Ecology, Ethnoecology, and Ecological Restoration. The result will be a much richer curriculum, with core courses at the third year level providing added breadth, and more specialized courses at the fourth year level. The new curriculum also provides framework for us to build on as we expand the program. More information on the curriculum is contained later in this handbook.

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### **3 ABOUT THE SCHOOL OF ENVIRONMENTAL STUDIES**

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#### **3.1. EDUCATIONAL APPROACH**

The School seeks to provide a more integrative approach to education than is found in traditional modes of enquiry. First, the approach depends on a synthesis of knowledge rather than focusing solely on the further refinement of knowledge within a given field. Second, enquiry is grounded in the concepts of whole systems, seeking to identify the connections and interactions between issues that go beyond the boundaries of traditional disciplines. Third, there is an emphasis on problem solving, including the context as well as the substance of a given issue. Finally, the School is concerned with translating theory into practice in order to move beyond the purely 'academic' aspects of human knowledge into the realm of social and biophysical applications.

Our curriculum reflects the premise that the long-term viability of human social systems depends on the continuing resiliency, diversity, and functioning of the natural ecosystems in which human systems are embedded. Moreover, as environmental issues involve the complex interactions of both social and biophysical systems, we can no longer afford to examine environmental issues and problems solely in terms of traditional fields of specialization.

The School views the 'environment' as the sum total of interacting factors and circumstances that surround, influence, and direct the growth and behaviour of individual beings, groups, species, communities, ecosystems, and organizations. The School promotes an appreciation of the complexity and diversity of relationships within and among environmental systems including human systems, an understanding of some of the main processes and consequences of environmental change, and the search for a more effective means of structuring human activities to reduce or prevent environmental degradation.

### **3.2. FOCUS ON INTERDISCIPLINARITY – LINKING SOCIAL AND BIOPHYSICAL SYSTEMS**

The mandate of the School has always been to offer integrative and interdisciplinary programmes at the undergraduate and graduate levels. Students are challenged to identify the connections that cut across common boundaries of research inquiry and teaching. For example, the major degree has always included cross-listed core courses in Geography, Biology, Economics and Philosophy and is paired with a co-major in another academic unit; ES does not offer a stand-alone BA or BSc.

Acknowledging that interdisciplinary studies are as important and valid and as traditional, disciplinary approaches, the School of Environmental Studies is a leading advocate of interdisciplinarity at the University of Victoria, and is recognized as such in the University's year 2000 Strategic Plan.

It is also notable that the School of Environmental Studies was cited as the location of appropriate research opportunities for aboriginal students in the 1999 University Aboriginal Programmes Review.<sup>2</sup> Students entering the School (often as their primary or two majors) come from as far away as Europe and Australia, attracted by the philosophy and content of the programme that we offer.

### **3.3. THE DOUBLE MAJOR - A COMPLEMENTARY CURRICULUM**

Our double major requirement is unique in Western Canadian ES programmes. Students from, for example, English, Chemistry, Biology and Geography all attend the same ES classes, where they share diverse perspectives and backgrounds. This approach ensures breadth (as provided by the School of Environmental Studies) and depth in a discipline (as provided by the student's other home department).

### **3.4. FACULTY AND RESEARCH INTERESTS**

#### *3.4.1 Core Faculty*

Dr. Eric Higgs (Director, and Professor) – Ecological restoration; landscape change especially in national parks and protected areas; culture-nature relationships; technology and culture change. (email: [ehiggs@uvic.ca](mailto:ehiggs@uvic.ca)).

Dr. Michael M'Gonigle (Professor and Chair of Environmental Law and Policy) – Strategies for developing sustainability, with a special focus on forestry and urban sustainability, and the pursuit of ecological "alternatives" in economic and constitutional policy. (email: [mgonigle@uvic.ca](mailto:mgonigle@uvic.ca)).

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<sup>2</sup> University of Victoria. Review: University of Victoria Aboriginal Initiatives. June 1999.

Dr. Karena (Kara) Shaw (Associate Professor) – Environmental politics; political theory; local/global sustainability; sustainability and ‘development’; feminist, environmental, and indigenous political movements; sustainable energy systems. (email: [shawk@uvic.ca](mailto:shawk@uvic.ca)).

Dr. Valentin Schaefer (Director, Restoration of Natural Systems Program) – Ecological restoration; biodiversity; urban ecology; Restoration of Natural Systems Faculty Coordinator (email: [rns@uvic.ca](mailto:rns@uvic.ca))

Dr. Duncan Taylor (Assistant Professor and Undergraduate Advisor) – History, politics and philosophy of the North American conservation and environmental movements; community forestry and ecoforestry; integral systems approach to societal and biophysical transformation; environmental ethics and environmental discourse. (email: [dmtaylor@uvic.ca](mailto:dmtaylor@uvic.ca)).

Dr. Nancy Turner (Professor) – Ethnobotanical and environmental knowledge of Indigenous Peoples of British Columbia, and its implications and applications in conservation biology, community forest use, forest and environmental policy, parks and protected areas, and environmental and cultural health and restoration. (email: [nturner@uvic.ca](mailto:nturner@uvic.ca)).

Dr. John Volpe (Associate Professor) — Ecological restoration; systems ecology; marine conservation and restoration; marine-based food production systems (email: [jpv@uvic.ca](mailto:jpv@uvic.ca)).

Dr. Wendy Wickwire (Associate Professor) – Oral tradition of the First Nations peoples of south central British Columbia; history of ethnography in British Columbia; ethnographic methodology. (email: [wickwire@uvic.ca](mailto:wickwire@uvic.ca)).

Dr. Brian Starzomski (Assistant Professor) – community ecology, conservation biology, biodiversity structure and dynamics (email: [starzom@uvic.ca](mailto:starzom@uvic.ca)).

Dr. Trevor Lantz (Assistant Professor) – ecology and ethnobiology, impacts of global change on ecocultural landscapes in western North America (email: [tlantz@uvic.ca](mailto:tlantz@uvic.ca)).

#### 3.4.2 *Adjunct Professors*

E. Richard Atleo, PhD (UBC) — Ethnoecology; Indigenous knowledge; Nuu-chah-nulth worldview; sustainable forestry practices

Brenda Beckwith, PhD (UVic) — Ethnoecology; cultural landscapes; Garry Oak ecosystems; ecological restoration

Lori Daniels, PhD (Man) –  
Douglas Deur, PhD (Louisiana State) — Ethnoecology; traditional plant use and cultivation on the Northwest Coast

Donald Eastman, PhD (UBC) — Ecological restoration; wildlife ecology and conservation; biodiversity conservation

Brian Egan – PhD (Carleton) –

Jenny L. Feick – PhD (Calgary) –

Robert Gifford, PhD (UBC) — Environmental psychology; social psychology; personality psychology; design of built environments

Purnima Govindarajulu, PhD (UBC) — Ecological restoration; conservation ecology; invasive species

Richard Hebda, PhD (UBC) — Ecological restoration; paleoecology; botany; climate change

Leif-Matthias Herborg, PhD (Newcastle) –

Thomas Heyd, PhD (Western Ontario) — Environmental philosophy and ethics; environmental aesthetics

Bryce Kendrick, DSc (Liverpool) —Mycology; conservation ecology

Nancy Mackin, PhD (UBC) — Ethnoecology; architecture; environments and culture; traditional ecological knowledge

Thomas Okey, PhD (UBC) –

Briony Penn, PhD (Edinburgh) — Ecological restoration; conservation; biogeography; environmental writing and communication

Hans Tammemagi, PhD (Australian National) –

Sandy Wyllie-Echieverria, PhD (Brigham Young) — Ethnoecology; marine systems conservation and restoration; seagrass ecology and conservation

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## **4 SES PARTNER ORGANIZATIONS AT UVIC**

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### **4.1. THE POLIS PROJECT ON ECOLOGICAL GOVERNANCE**

Launched in the fall of 2001, the Polis Project on Ecological Governance is a community based research project that evolved out of work of the Eco-Research Chair of Environmental Law and Policy, the only permanent Eco-Research initiative emanating from Ottawa in the 1990s. With a diversity of projects on topics from “green legal theory” to sustainability law, from water management to sustainable campuses, POLIS is oriented to innovative research and practical implementation. Located in University House 4, POLIS is staffed by several research associates.

For more information: 250-721-6388, email [polis@uvic.ca](mailto:polis@uvic.ca)

Visit <http://www.polisproject.org/>

#### **4.2. THE UNIVERSITY OF VICTORIA SUSTAINABILITY PROJECT (UVSP)**

The UVic Sustainability Project has a strong relationship with the students and faculty of the School, and was in fact created by active and engaged members of the Environmental Studies Students Association (ESSA.) The UVic Sustainability Project seeks to make UVic a sustainable campus. It attempts to address all aspects of sustainability as it pertains to the university. This includes the more immediately obvious factors, like waste and energy reduction and green transportation, but also includes issues such as the institution's investment practices, curriculum, and equity, because they believe that true sustainability requires a holistic approach, and must permeate every aspect of an organization. Inspired by ESSA participants attending the Sierra Youth Coalition's first Sustainable Campuses Conference in Ottawa in the Fall of 1999, the UVic Sustainability Project soon undertook Canada's largest and most comprehensive university sustainability audit. Within a period of one year they completed thirteen audits of different components of the university, created a full time Sustainability Officer Position and formed an advisory committee to the Vice-President Operations and Finance. The project has rapidly gained support from many faculty members, student groups and administrative bodies.

The UVic Sustainability Project office is located in the Student Union Building, Room B007. For more contact information visit <http://uvsp.uvic.ca/> or send an email to: [uvsp@uvic.ca](mailto:uvsp@uvic.ca)

#### **4.3. THE ENVIRONMENTAL STUDIES STUDENT ASSOCIATION (ESSA)**

ESSA is the official undergraduate students' course union for students majoring in or taking at least one course in the School of Environmental Studies. ESSA is a member of the University of Victoria Students' Society (UVSS) and is represented within the School of Environmental Studies. ESSA serves as the voice of ES undergraduate students.

ESSA has been an active force on campus for most of the past 30 years since the students first got involved. Now, ESSA screens films, hosts social events, invites speakers, and provides student representation. In the past, ESSA had a Programme Review Committee that provided feedback to the School on its course offerings. ESSA advocates not only for the students, but also for the School – both in the university environment and in the broader community.

*The Essence* is the newsletter of the Environmental Studies Students Association and is published twice per academic year (Fall & Winter). It provides students with a forum for discussion of local, national, and global issues dealing with the environment and presents these issues from an Environmental Studies perspective. Submissions are always welcome.

A listserv is in place for ESSA-related communication <<https://lists.uvic.ca/mailman/listinfo/essa>>. This listserv is a distributed listing of meeting notices, meeting minutes, upcoming events, items of interest, and Essence related communication.

To get involved or to find out more, contact the Environmental Studies Students Association Coordinator at [essa@uvic.ca](mailto:essa@uvic.ca)

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## 5 STUDENT ADVISING

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Students considering Environmental Studies are advised to read this field guide as the first step; it will provide most students with the information they need. Please contact the Advising Centre for Humanities, Sciences and Social Sciences for course planning: 250-721-7567, <http://web.uvic.ca/advising/>.

The Environmental Studies office can answer routine questions: [esoffice@uvic.ca](mailto:esoffice@uvic.ca). Finally, for specific programme counselling, advice and troubleshooting contact the Undergraduate Student Advisor (721-7354, email: [esadvise@uvic.ca](mailto:esadvise@uvic.ca)).

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## 6 SCHOOL OF ENVIRONMENTAL STUDIES DEGREE PROGRAMMES

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### 6.1. GENERAL INFORMATION

The School of Environmental Studies offers an interdisciplinary program with courses that examine the relationships of biophysical and social systems. The School's premise is that the long-term viability of human social systems is grounded in the continuity of diverse and resilient ecosystems. Inquiry focuses on the systemic aspects of environmental issues and solutions that cut across the boundaries of traditional disciplines. There is the recognition that many aspects of local, national and international environmental problems are inextricably connected to our dominant cultural values, and attendant political, social, economic and educational institutions.

The intellectual strength of the School is supported by three distinctive, interdisciplinary research specialties: political ecology, ethnoecology, and ecological restoration. Each professor in the School typically has a primary and at least one secondary specialty, which creates an even richer interdisciplinary setting. These specialties infuse the undergraduate curriculum, provide the primary subject areas for graduate studies, and define the research activities of the School's academic staff. Each of these three specialties corresponds to a theme, and together these form the motto of the School: Respect, Restore, Sustain (matching ethnoecology, restoration, and political ecology, respectively).

Students are required to combine studies in a traditional discipline with their Environmental Studies program in order to obtain a degree notation that includes Environmental Studies. Students undertake the Major in Environmental Studies together with a Major in another department or a Major with an Honours Program or a Major in another Faculty. These programs lead to either a BA or a BSc degree. A General Program leading to a BA is also offered. By completing the requirements for the General Program together with a Major or Honours Program in another department or faculty, students may obtain a Minor in Environmental Studies.

Students considering a Major, Minor or General program in Environmental Studies must take our introductory course, ES 200 (Introduction to Environmental Studies), unless they have already completed ES 300A. It is suggested that students declare their intention to enrol in Environmental Studies by the end of their second year of study.

Many eligible courses in Environmental Studies are 300 and 400 level with prerequisites; students should therefore plan early to incorporate these prerequisites into their schedule, and should be aware of the minimum grade requirements for the programs: a B- in ES 200.

When choosing electives, students are also encouraged to include courses in languages and in areas other than those in which the student is majoring; e.g., a student majoring in Sciences should choose electives from the Social Sciences or Humanities.

## **6.2. UNDERGRADUATE PROGRAMME**

ES Majors and Minors: We have made some changes to the requirements for a Major or Minor in Environmental Studies. Don't panic, though: the changes should make it easier to complete your degree. Also note, if you have already begun to complete your degree, you have the option to complete under the old requirements or to switch to the new ones: it's up to you. The new requirements are detailed below; you can find the old ones in the UVic Calendar for the year you began the program. If you have any questions, don't hesitate to contact the ES Undergraduate Advisor: [esadvise@uvic.ca](mailto:esadvise@uvic.ca). Descriptions of all of the courses we offer are available in the UVic Calendar: <http://web.uvic.ca/calendar>

### *6.2.1 Requirements for an ES Major*

First, at the first and second year level you are required to take two courses:

#### ES 200: Introduction to Environmental Studies.

This is a prerequisite for all upper-level ES courses. You must achieve a minimum of a B- in this course in order to declare a Major in Environmental Studies.

#### ES 240: Ecological Processes

This fulfils our quantitative methodology requirement, and it is also a prerequisite for ES 341. However, you do NOT need to take it if you have taken BIOL 215: Principles of Ecology.

Second, you have to take the Core Courses:

#### ES 301: Political Ecology

#### ES 321: Ethnoecology

#### ES 341: Ecological Restoration

Finally, you need to take 10.5 units of upper-level courses in Environmental Studies.

With the approval of the ES Undergraduate Advisor, up to 4.5 of these units can be taken from other departments or schools.

### *6.2.2 Requirements for an ES Minor*

First, at the first and second year level you are required to take two courses:

#### ES 200: Introduction to Environmental Studies.

This is a prerequisite for all upper-level ES courses. You must achieve a minimum of a B- in this course in order to declare a Major in Environmental Studies.

### ES 240: Ecological Processes

This fulfills our quantitative methodology requirement, and it is also a prerequisite for ES 341. However, you do NOT need to take it if you have taken BIOL 215: Principles of Ecology.

Second, you have to take the Core Courses:

### ES 301: Political Ecology

### ES 321: Ethnoecology

### ES 341: Ecological Restoration

Finally, you need to take 4.5 units of upper-level courses in Environmental Studies.

With the approval of the ES Undergraduate Advisor, up to 1.5 of these units can be taken from other departments or schools.

## **6.3. UNDERGRADUATE COURSES OFFERED**

*Note: not all of these courses will be offered every year. However, we try to offer core required courses every semester, and others as frequently as we are able.*

### **ES 200: Introduction to Environmental Studies**

Units: 1.5, Hours: 3-1

Introduction to the symptoms and sources of environmental problems and approaches to resolving them. Students will apply their understanding through a distinctive interdisciplinary exploration of three main themes: ecological restoration (the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed), political ecology (the theory and practice behind sustainability) and ethnoecology (the study of the relationship between people and their habitats).

Note: Credit will be granted for only one of 200, 300A.

### **ES 240: Ecological Processes**

Units: 1.5, Hours: 3-0-3

An introduction to the discipline of ecology with a focus on understanding biotic processes as they relate to contemporary environmental challenges. Laboratories emphasize methodologies for the generation, analysis and application of data.

### **ES 301: Political Ecology**

Units: 1.5, Hours: 3-0

This course introduces the various socio-political and philosophical issues associated with the concept of a sustainable society. Emphasis is placed on the analysis of the complex relationships between social and biophysical systems. In turn, this course will examine how communities and environments are being impacted by the globalization of economies and cultures, technologies and ideologies, as well as responses from a variety of local, non-governmental and international agencies.

Prerequisites: 200 or 300A.

### **ES 312: Environmental Economics**

Units: 1.5, Hours: 3-0

Economic principles as applied to problems of living in the natural environment. The problem of spillovers associated with economic processes. Externalities and their management through economic institutions. Problems of conservation and possible limits to economic growth arising from scarcity of environmental resources.

Note: Credit will only be given for one of 312, ECON 330 or ECON 381.

Also: ECON 381

Prerequisites: ECON 103 or ECON 201, and ECON 225.

### **ES 314: Philosophy and the Environment**

Units: 1.5, Hours: 3-0

A philosophical investigation of the moral and conceptual dimensions of environmental problems. Different philosophies of the relation between humans and nature will be compared. Some of the topics to be examined are: human wants and human satisfactions; nature and spiritual values; community; human obligations to other animals; defining quality of life.

Note: Credit will be granted for only one of 314, PHIL 333.

Also: PHIL 333

Prerequisites: Third or fourth-year standing, or permission of the instructor.

### **ES 320: Conservation Biology**

Units: 1.5, Hours: 3-0

Diversity of organisms, functioning of ecosystems, and the impact of human activities on these. Topics include the nature of biological diversity; extinction and its causes; habitat alteration and fragmentation; effects of exotic species; economic and ethical considerations; practical applications and analytical tools; and legal frameworks for conserving species and habitats.

Note: Credit will be granted for only one of 320, 318, 348, ER 313, BIOL 370.

Also: BIOL 370

Prerequisites: Completion of Biology core including STAT corequisites, or for students other than Biology majors BIOL 190A (or 210), 215, 230 and STAT 255 or 260.

### **ES 321: Ethnoecology**

Units: 1.5, Hours: 3-0

Environmental knowledge systems of indigenous and other local peoples are increasingly recognized as having relevance in understanding and documenting biological diversity and conservation and in undertaking ecological restoration. The different aspects of local and traditional ecological knowledge and their relationships to western academic knowledge are reviewed and the issues and requirements for applying local knowledge in environmental sustainability are explored. This course is a prerequisite for the more advanced courses on ethnobotany and traditional land and resource management.

Prerequisites: 200 or 300A.

### **ES 341: Ecological Restoration**

Units: 1.5, Hours: 3-0

This course examines how effective restoration depends on both ecological and cultural awareness, including the physical, chemical and biological characteristics of ecosystems from local to global scales; the impacts of human-induced change; the philosophical and ethical context for good restoration; the need for and significance of community involvement; the legal and policy frameworks

that direct and influence restoration activities; and the importance of understanding essential ecosystem characteristics in restoration.

Note: Credit will be granted for only one of 341, 352, ER 311, ES 400D if 400D taken in 1995-96.

Also: ER 311

Prerequisites: 240 and 200, or 300A.

#### **ES 344: Ecological Methods**

Units: 1.5, Hours: 3-3

An introduction to experimental and statistical ecology, including principles of experimental design and sampling methods and data analysis.

Note: Credit will be granted for only one of 344, 310, BIOL 330.

Also: BIOL 330

Prerequisites: STAT 255 or 260.

Pre- or corequisites: BIOL 215.

#### **ES 348: Biodiversity and Conservation Biology**

Units: 1.5, Hours: 3-0

Study of biological organisms and ecosystems with particular reference to mechanisms of change and human impacts on the environment. Will focus on: biodiversity (definition, assessment methods, loss, and evaluation); population biology (concepts and research methods); habitat loss; species extinction; exotic species and their impacts; and possibilities for human intervention in alleviating trends in species loss and ecosystem degradation.

Note: Credit will be granted for only one of 348, 318, 320, ER 313, BIOL 370.

Also: ER 313

Prerequisites: BIOL 190A and 190B or equivalent, ES 200 or 300A.

#### **ES 380: Environmental Topics: Topics in Sustainable Communities**

Units: 1.5, Hours: 3-0

An in-depth systematic examination of specific environmental areas through seminars and projects; the development of appropriate responses to questions and problems within the selected areas; modes of interaction and communication with professional and community groups; application of theory to practice; qualitative vs. quantitative research methods. This course will be conducted as a seminar and may include a field trip for which a fee will be charged.

Note: Credit will be granted for only one of 380, 300B unless approved by the Director. May be taken more than once for credit in different topics to a maximum of 3 units.

Prerequisites: 200 or 300A.

#### **ES 381: Environmental Topics: Topics in Ethnoecology**

Units: 1.5, Hours: 3-0

An in-depth systematic examination of specific environmental areas through seminars and projects; the development of appropriate responses to questions and problems within the selected areas; modes of interaction and communication with professional and community groups; application of theory to practice; qualitative vs. quantitative research methods. This course will be conducted as a seminar and may include a field trip for which a fee will be charged.

Note: Credit will be granted for only one of 381, 300B unless approved by the Director. May be taken more than once for credit in different topics to a maximum of 3 units.

Prerequisites: 200 or 300A.

**ES 382: Environmental Topics: Topics in Ecological Restoration**

Units: 1.5, Hours: 3-0

An in-depth systematic examination of specific environmental areas through seminars and projects; the development of appropriate responses to questions and problems within the selected areas; modes of interaction and communication with professional and community groups; application of theory to practice; qualitative vs. quantitative research methods. This course will be conducted as a seminar and may include a field trip for which a fee will be charged.

Note: Credit will be granted for only one of 382, 300B unless approved by the Director. May be taken more than once for credit in different topics to a maximum of 3 units.

Prerequisites: 200 or 300A.

**ES 402: Global Issues in Sustainability**

Units: 1.5, Hours: 3-0

Concepts of sustainability, development and security and their global dimensions; global environmental threats and their sociopolitical implications. Sustainability and development strategies in a north-south context; the role of international agencies in development; global issues of population, energy and resources; international regimes for environmental conservation; war and environment.

Note: Credit will be granted for only one of 402, 420, 400A if 400A taken in 1989-94.

Prerequisites: 200 or 300A, and 301.

**ES 404: Discourses of Environmentalism**

Units: 1.5, Hours: 3-0

A seminar examining classic works and persistent themes in North American environmental thought. A study of primary source material and texts by writers such as Thoreau, Austin, Muir, Pinchot, Leopold, Carson, Ellul, Schumacher, Berry, and Shiva.

Note: Credit will be granted for only one of 404, 424, 400D if 400D taken in 1993-95.

Prerequisites: 200 or 300A, and 301.

**ES 414: Systems Theory: An Introduction to Natural and Social Systems**

Units: 1.5, Hours: 3-0

The purpose of this course is to enable each participant to grasp the fundamental principles of systems theory, and to provide a foundation for further exploration and application of systems concepts. The course will examine concepts such as cybernetics, holism, boundaries, negative and positive feedback, self-organization, and transformation. Students will learn to apply these principles to both natural and social systems. This course will be taught as a seminar.

Note: Credit will be granted for only one of 414, 400D if 400D taken prior to 1989-90.

Prerequisites: 200 or 300A, and one of 301, 321 or 341.

**ES 417: Women and Environments**

Units: 1.5, Hours: 3-0

An exploration of the developing interactions between feminism and environmentalism. Topics to be covered include the construction of relationships between women and nature, ecofeminism, women and sustainable development, and women's historical and contemporary environmental activism.

Note: Credit will be granted for only one of 417, 422, 400A if 400A taken in 1994-95.

Prerequisites: 200 or 300A, and 301

**ES 418: Environmental Law: Policy and Legislation**

Units: 1.5, Hours: 3-0

Examination of legal procedures including traditional common law remedies and promising new legislative innovations, consideration of the expression of public values and environmental policies, and government decision making processes.

Note: Credit will be granted for only one of 418, 400D if 400D taken in 1990-92.

Prerequisites: 200 or 300A, and 301.

**ES 419: Green Legal Theory**

Units: 1.5, Hours: 3-0

A seminar that addresses a theoretical basis for environmental law and policy; individual research, presentation and contribution to a collected work on the theme is required. Open to upper year students in the Faculty of Law and students with at least fourth-year standing in the Environmental Studies Program.

Notes: - Credit will be granted for only one of Law 328, ES 419, ES 450.

Also: LAW 328

Prerequisites: For ES students: 200 or 300A, and 301.

**ES 421: Ethnobotany: Plants and Human Cultures**

Units: 1.5, Hours: 3-0

An introduction to the study of the relationship between plants and human cultures, with a focus on the indigenous peoples and environments of northwestern North America. Use of plants as foods, materials and medicines, plant nomenclature and folk classification, and the role of plants in religion and mythology are topics covered. There will be one or more field trips.

Note: Credit will be granted for only one of 421, 416.

Prerequisites: 300A or 200 and 321.

**ES 423: Traditional Systems of Land and Resource Management**

Units: 1.5, Hours: 3-0

The role of traditional ecological knowledge in the understanding and documentation of the biodiversity of natural systems and their restoration. Examination of how restoration strategies can benefit from the close relationship of Indigenous Peoples to their local environments, and from their knowledge of plants and animals, their habitats and ecological interrelationships, as well as from traditional land and resource management strategies.

Note: Credit will be granted for only one of 423, 353, ER 326.

Also: ER 326

Prerequisites: 200 or 300A, and 321.

**ES 428: Ethnographic Methods in Environmental Research**

Units: 1.5, Hours: 3-0

Methods of ethnography (research design, observation, interviewing, textual recording and data retrieval) designed to provide students from a range of disciplines with the skills necessary to study the layers of socially-held knowledge which infuse all fields of environmental endeavour. Ethnographic exercises in the community are a course requirement.

Note: Credit will be granted for only one of 428, ANTH 428. Not open to students with credit in 400A, 1996-98.

Formerly: Also ANTH 428

Prerequisites: 200 or 300A, and one of 301 or 321.

**ES 430: Cultural Ecology**

Units: 1.5, Hours: 3-0

Theories concerning the relationship of human groups, culture and environment; cultural systems as the means by which human populations adapt to their environments.

Note: Credit will be granted for only one of 430, ANTH 401.

Also: ANTH 401

Prerequisites: For ES students: 200 or 300A, and one of 301 or 321. For ANTH students: a minimum grade of B- in ANTH 200.

**ES 446: Sustainable Fisheries**

Units: 1.5, Hours: 3-0

A practical examination of sustainable fisheries from a variety of interdisciplinary perspectives. Examines sustainability issues for fisheries and aquaculture through an integrated study of fish biology/ecology, oceanography, hydrology, environmental impact assessment, natural resource management and environment and land use planning.

Note: Credit will be granted for only one of 446, 426, 400C if 400C taken in 1992-96.

Prerequisites: 200 or 300A, and one of 321 or 341.

**ES 461: Environmental Impact Assessment**

Units: 1.5, Hours: 3-0

An introduction to the objectives, philosophy, concepts, methods and social implications of environmental impact assessment (E.I.A.). A critical examination of E.I.A. as an analytical tool in the context of resource management and public policy is undertaken.

Note: Credit will be granted for only one of 461, 410, 400A if 400A taken prior to 1989-90.

Prerequisites: 200 or 300A, and one of 301, 321 or 341.

**ES 462: Environmental Protection**

Units: 1.5, Hours: 3-0

The theory and practice of minimizing human impacts on the environment from an ecosystem-based perspective. An introduction to environmental information systems, risk assessment and risk management. Responses by government and civil society. Application of the precautionary principle, voluntary Environmental Management Systems, pollution prevention and life cycle analysis.

Note: Credit will be granted for only one of 462, 432, 400B if 400B taken in 1993-98.

Prerequisites: 200 or 300A, and 341.

**ES 470: Field Study**

Units: 1.5

Supervised research or organized projects related to environmental problems, supplemented by directed individual study. A formal report is required.

Note: May be repeated once for credit.

Prerequisites: 200 or 300A, and one of 301, 321 or 341.

**ES 480: Advanced Environmental Topics in Sustainable Communities**

Units: 1.5, Hours: 3-0

A focused, in-depth systematic examination of specific environmental areas through seminars and projects; the development of appropriate responses to questions and problems within the selected areas; modes of interaction and communication with professional and community groups; application of theory to practice; and qualitative vs. quantitative research methods. These courses will be conducted as seminars and may include a field trip for which a fee will be charged.

Note: May be taken more than once for credit in different topics.

Prerequisites: 200 or 300A, and one of 301, 321 or 341.

#### **ES 481: Advanced Environmental Topics in Ethnoecology**

Units: 1.5, Hours: 3-0

A focused, in-depth systematic examination of specific environmental areas through seminars and projects; the development of appropriate responses to questions and problems within the selected areas; modes of interaction and communication with professional and community groups; application of theory to practice; and qualitative vs. quantitative research methods. These courses will be conducted as seminars and may include a field trip for which a fee will be charged.

Note: May be taken more than once for credit in different topics.

Prerequisites: 200 or 300A, and one of 301, 321 or 341.

#### **ES 482: Advanced Environmental Topics in Ecological Restoration**

Units: 1.5, Hours: 3-0

A focused, in-depth systematic examination of specific environmental areas through seminars and projects; the development of appropriate responses to questions and problems within the selected areas; modes of interaction and communication with professional and community groups; application of theory to practice; qualitative vs. quantitative research methods. These courses will be conducted as seminars and may include a field trip for which a fee will be charged.

Note: May be taken more than once for credit in different topics.

Prerequisites: 200 or 300A, and one of 301, 321 or 341.

#### **ES 490 Directed Studies**

Units: 1.5-3.0

Individual studies on approved environmental topics undertaken by students in consultation with faculty members. Projects will be supervised by one or more faculty members designated by the Director.

Note: Restricted to students taking a major or minor in Environmental Studies. May be taken more than once for credit to a maximum of 3 credits.

Prerequisites: 200 or 300A, fourth-year standing with a sessional grade point average of 6.5, and permission of the Director.

### **6.4. UNDERGRADUATE FINANCIAL ASSISTANCE**

#### *6.4.1 Work Study Programme – Information for Undergraduate Students*

A limited number of Work Study positions are available for undergraduate students in the School of Environmental Studies.

The University of Victoria Work Study Programme is funded solely by UVic. As the Work Study Programme is no longer a component of the British Columbia Student Assistance Programme

(BCSAP), students will no longer be required to apply for and receive student loans to qualify for participation in the Work Study Programme.

The Work Study Programme is designed to provide on campus work experience for students requiring financial assistance. University of Victoria students who demonstrate financial need will be eligible to participate in the Work Study Programme. For more information visit the Student Awards & Financial Aid office located on the 2nd floor of the University Centre (Phone: (250) 721-8423; E-mail: [finaid@uvic.ca](mailto:finaid@uvic.ca) or visit them on the web at <http://registrar.uvic.ca/safa/workstudy/workstudyindex.html>

#### *6.4.2 Undergraduate Scholarships, Bursaries and other Awards*

For more details and a complete list of awards and scholarships see Student Awards and Financial Aid at <http://web.uvic.ca/safa/>. Below you will find details about those awards that are specific to the School.

##### 6.4.2.1 The Lorene Kennedy Student Bursaries

It is with great pleasure that we announce the Lorene Kennedy Student bursaries. Dr. Kennedy was a botanist who left almost three million dollars as an endowment for ES student bursaries. Dr. Kennedy was a modest, quiet person who was driven to succeed despite the many barriers she faced, and who felt strongly that all interested students should have the opportunity to obtain an education. She was concerned about all of the things that biologists worry about: loss of habitat, loss of diversity. She saw the School of Environmental Studies as providing an education that combined scientific understanding of biology and ecology with an awareness of the importance of conservation.

The bursaries she endowed are available to students with a declared major or minor in Environmental Studies, and they are need based. Her desire was to help others who wished to study the environment. The applications for bursaries are due in early Fall, and are administered through Student Awards and Financial Aid. Contact them for more details: <http://registrar.uvic.ca/safa/>

##### 6.4.2.2 Derrick & Gwen Mallard Scholarship In Environmental Protection

A scholarship of \$1,000 is awarded to a student entering the fourth year of a major in Environmental Studies with a record of contribution to the protection of the environment. Recipients are selected by the Senate Committee on Awards based on the recommendations of the School of Environmental Studies. This award is advertised in April, with applications due to the School's main office around May 1.

##### 6.4.2.3 The Vicky Husband Scholarship

A scholarship of \$1,000 is awarded to a student entering third or fourth year in the major programme in the School of Environmental Studies and who has a record of outstanding contributions to the volunteer sector of environmental work. A letter of recommendation must be submitted by an organization providing evidence that the applicant has demonstrated exceptional contributions to environmental work as a volunteer. The Senate Committee on Awards makes the selection upon the recommendation of the School of Environmental Studies. This award is advertised in April, with applications due to the School's main office around May 1.

#### 6.4.2.4 Stephen Canning Memorial Scholarship

Stephen Canning, a talented student in School of Environmental Studies and an accomplished mountaineer, died tragically while ascending Mount Logan. This scholarship was created by his friends and family in his memory, and it seeks to recognize and assist other ES students who share his talents and aspirations. The scholarship is awarded annually to a student who has achieved academic excellence and is entering the 3<sup>rd</sup> or 4<sup>th</sup> year of a declared major or minor in Environmental Studies or Writing, or to a student in the Restoration of Natural Systems diploma program. A letter of application must be submitted to the School of Environmental Studies illustrating a record of service and commitment to nature as well as a passion for communicating these interests and values. This award is advertised in April, with applications due to the School's main office around May 1.

#### 6.5. DIPLOMA IN THE RESTORATION OF NATURAL SYSTEMS

A Diploma in the Restoration of Natural Systems (ER) is also offered in co-operation with the Division of Continuing Studies. See the Continuing Studies website for details: <http://www.uvcs.uvic.ca/sustainability/programs/>.

The Diploma requires 18 units of course work. It may be taken on a full-time basis (two years required for completion) or on a part-time basis (with a limit of six years). Students are admitted to the Diploma Programme on the recommendation of the Faculty Coordinator and/or the Chair of the Programme Steering Committee.

Normally, admission to the Diploma programme will require completion of a minimum of two years of university transfer credit with the required standing for University admission, and is also available to post-baccalaureate students. Background preparation that includes basic sciences (biology, chemistry and physical geography) is strongly recommended, and may be considered in competitive admission. The preparation of each student is assessed on entry, and additional lower level courses may be required.

Courses are offered at the third-year level and include offerings cross-listed with regular third-year UVic courses. Students should anticipate expected standards of written work and examinable material at this level. To remain in the programme, and to graduate, diploma candidates must maintain a GPA of 4.0.

The fee for application to the RNS Programme is \$120. This is a one-time fee payable with your application to the Programme. The other fee unique to this Programme is a \$60 annual fee payable for each year that you are enrolled. These fees are in addition to the tuition of approximately \$550 for each course. These fees are income tax deductible. Books and supplies will cost anywhere from \$70 to \$200 per course.

Course descriptions for ER courses are available at the UVic Calendar: <http://web.uvic.ca/calendar> For most recent course outlines, see [www.uvcs.uvic.ca/restore](http://www.uvcs.uvic.ca/restore) or call the RNS office at 721-8461. For Diploma and Certificate requirements, please check the RNS brochure or web site.

### 6.5.1 Combining ES and RNS

It is possible—and indeed quite easy—to combine your degree in Environmental Studies with a diploma or certificate in the Restoration of Natural Systems. Many of the courses you would take could count towards fulfilling requirements for both your Major/Minor in ES and your Certificate or Diploma. This means that usually by taking only a few additional courses, you could graduate with an additional qualification. For more information about how to combine the two, see the RNS coordinator: Dr. Val Schaefer ([rns@uvic.ca](mailto:rns@uvic.ca)).

### 6.5.2 RNS Student Resources

The Restoration of Natural Systems programme maintains a library of restoration related books, journals, and articles on a searchable database (see the RNS website for a list of holdings - <http://web.uvic.ca/enweb/rns/home.html>). The RNS Library is located in the Social Sciences and Math Building, B241. The library also has an Internet ready computer.

There is also the RNS News, which is a bi-weekly publication of restoration related news, updates, job postings and volunteer opportunities posted on the Restoration of Natural Systems Program website.

### 6.5.3 RNS Courses Offered

*Note: Environmental Studies students are able to take RNS courses, if there is space available in them. To request registration in an ER course, contact Kate Powers by email at [kpower@uvcs.uvic.ca](mailto:kpower@uvcs.uvic.ca) or phone 721-8481, and give her your name, student number, course you wish to take and the best way to contact you. Once RNS students have registered, you will be contacted if there is space. Three ER courses are offered each term. For current offerings see the timetable and registration guide or check the website indicated above.*

*Another note: Unless otherwise indicated, all classes are 1.5 units.*

#### **ER 200: Scientific Principles and Concepts for Environmental Restoration**

Units: 0.5 per module

An opportunity to gain background knowledge in selected scientific disciplines relevant to environmental restoration. Possible topics may include ground water, quantitative ecology, statistics, marine biology, and others. Students take modules of existing courses at the University of Victoria.

Notes: - A module consists of the first third of a scheduled course.

- Registration is limited and open only to Diploma students registered in the RNS program. Please contact the program coordinator in the Division of Continuing Studies for information about course availability and registration procedures.

#### **ER 311: Principles and Concepts of Ecological Restoration**

Discussion of physical and biological characteristics of ecosystems and processes with emphasis on British Columbia. Examines natural and human-caused changes at ecosystem to species level; discussion of ecosystems and biodiversity; consideration of philosophy and ethics of restoration and an introduction to legal and policy frameworks. Introduction to assessing the stated ecosystems and developing recommendations through field visits. Combines factual scientific analysis of ecosystems in the context of human values and needs.

Note: Credit will be granted for only one of 311, ES 352, ES 341, ES 400D if 400D taken in 1995-96. May be taken for credit by Diploma students as ER 311 without prerequisite credit.

Also: ES 341

Prerequisites: ES 200 or ES 300A; or permission of the Director if taken as ES 341.

**ER 312A: Field Study in Ecological Restoration I**

Introduces basic field methodologies for assessment and restoration of local sites; includes individual and group field research, and involves field surveys, observation and background study on specific ecosystem types.

**ER 312B: Field Study in Ecological Restoration II**

An advanced field study course involving detailed site evaluation (prescription). May involve participation in a restoration project. With permission, the practicum can be undertaken at locations outside the province or internationally.

Prerequisites: ER 312A.

**ER 313: Biodiversity and Conservation Biology**

Study of biological organisms and ecosystems with particular reference to mechanisms of change and human impacts on the environment. Will focus on: biodiversity (definition, assessment methods, loss, and evaluation); population biology (concepts and research methods); habitat loss; species extinction; exotic species and their impacts; and possibilities for human intervention in alleviating trends in species loss and ecosystem degradation.

Note: Credit will be granted for only one of 313, ES 318, ES 320, ES 348, BIOL 370.

Also: ES 348

Prerequisites: Biology 150A and B or equivalent, or permission of the instructor. If taken as ES 348, ES 200 is a prerequisite.

**ER 314: Ethical, Legal and Policy Aspects of Environmental Restoration**

Addresses the relationship of environmental values to legislative and legal systems. Includes: ethical considerations in land management; future economic benefit and ecological cost; the land ethic; policy and legal considerations in restoration; and eco-restoration in research and natural resource management programs.

**ER 325: Ecosystems of British Columbia, Canada and the World**

A survey of the major ecozones of Canada and the world, their characteristics, and their current status. Classification systems in Canada and British Columbia. Major types of ecosystems, from marine and aquatic to forest, grassland, and desert systems will be discussed including the significant threats to each, and core causes of change. Consideration given to biodiversity; fragmentation; ecological resilience; succession.

**ER 326: Traditional Systems of Land and Resource Management**

The role of traditional ecological knowledge in the understanding and documentation of the biodiversity of natural systems and their restoration. Examination of how restoration strategies can benefit from the close relationship of Indigenous Peoples to their local environments, and from their knowledge of plants and animals, their habitats and ecological interrelationships, as well as from traditional land and resource management strategies.

Notes: - Credit will be granted for only one of 326, ES 353, ES 423.

- May be taken for credit by Diploma students as ER 326 without prerequisite credit.

Also: ES 423

Prerequisites: ES 200 or 300A or permission of the Director if taken as ES 423.

**ER 327: Ecorestoration Strategies: Case Studies**

Examination of specific sites illustrating restoration problems and solutions. Examples include mine reclamation projects, highway and rail right-of-way stabilization, urban ravine and stream rehabilitation.

**ER 328: Forest Restoration and Sustainable Forestry**

Basic concepts of forest ecology and succession following natural and human disturbance. "Old Growth": definition and characteristics. Forest practices from a restoration viewpoint: the ecoforestry model. Planning and restoration strategies for hydriparian zones. Analysis of silvicultural prescriptions and terrain issues (slope stability, road building) from an ecological perspective.

**ER 329: Mining Restoration**

Impact of mines and mining practices on natural systems and landscapes; physical and chemical characteristics of mine sites and debris; restoration vs. reclamation; pre- and post-disturbance restoration strategies; engineering issues; revegetation and remediation of soil at mine sites; long term problems such as slope stability and acid mine drainage; legislation, policies and regulations.

Note: Background in physical geography such as GEOG 213 or equivalent strongly recommended.

**ER 330: Role of Engineering and Geoscience in Environmental Restoration**

Basic engineering works and their impact on natural systems; relationship of natural, physical and constructed features to restoration. Impact of construction on slopes and hydrology, role of substrate, landform process, bioengineering, design and reclamation of roads, stream and shoreline construction, and restoration and engineering design.

Note: Background in physical geography, hydrology strongly recommended.

**ER 331: Urban Restoration and Sustainable Agricultural Systems**

The role of restoration of natural systems in the populated landscape; structural characteristics of the landscape and its natural ecological potential; sustainable intensive human use. Planning and design, role of green space, natural corridors, recreation, soil and water conservation and restoration, ecological landscape architecture, integrated pest management, organic agriculture, urban agriculture, permaculture. British Columbia and world examples.

**ER 332: Selection and Propagation of Native Plants for Ecological Restoration**

An introduction to the principles of native plant selection and propagation to meet site-specific objectives for ecosystem restoration. Topics include native plant propagation techniques; the role of artificial propagation in ecosystem rehabilitation and restoration; criteria for species selection; scientific and ethical principles for the collection of propagation materials; site stabilization; site preparation; out-planting; and bio-engineering.

Note: Credit will be given for only one of 332 and 338 under this topic.

**ER 333: Reclamation and Restoration of Contaminated Sites**

Role of toxic substances in ecosystems and restoration of contaminated sites. The properties of toxics and their distribution in water and soil. Ecological risk assessment and priority toxics management. Site assessment. Monitoring, decontamination, reclamation and restoration of specific sites.

Note: First year chemistry recommended.

**ER 334: Soil Conservation and Restoration**

Physical, chemical and biological characteristics of soils and their relationship to restoration. Soil fertility; importance of soil flora and fauna, especially mycorrhizae. Comparison of characteristics of undisturbed soils. Types of soil disturbance in agriculture, forestry, mining and urban environments; soil restoration strategies; planning pre- and post-disturbance.

Note: Background in physical geography such as GEOG 213 or equivalent strongly recommended.

**ER 335A: Restoration of Fresh Water Aquatic Systems**

Theory and case studies of disturbances and restoration; character and processes of aquatic systems; types of natural aquatic systems; types of disturbance and their impact; restoration strategies for watersheds, riparian zones, streams, rivers, lakes, and wetlands.

**ER 335B: Restoration of Marine Aquatic Systems**

Types, characteristics and processes of natural marine aquatic systems including physical and biotic factors; types of disturbance and their impacts; restoration strategies for different types of marine aquatic ecosystems including estuaries, near shore and offshore systems; case studies of disturbances and restoration (e.g. coral reefs, benthic communities and sediments).

Note: Background in biology strongly recommended.

**ER 336: Education, Communication and Dispute Resolution in Restoration of Natural Systems**

Role of communication and education in the restoration of natural systems, emphasizing the importance of clear communication: principles and techniques of effective communication, survey of communication and educational methods, social and cultural frameworks of the message defining issues, techniques of dialogue, recognizing and resolving conflict, organizing data and message. Emphasis on oral presentations.

**ER 338A-D: Special Topics in Environmental Restoration**

Units: 0.5 to 1.5

Selected topics in environmental restoration that address particular issues, industrial sectors or biogeoclimatic variation.

Note: May be taken more than once for credit in different topics.

**ER 351: Introduction to Non-Timber Forest Products (NTFP) and their Management**

An introduction to the commercial, cultural, subsistence, and recreational uses of non-timber forest products in BC. Topics include challenges of sustainable use; ethical and legal issues; First Nations use, ownership, and intellectual property rights; and a range of management practices from resource protection and natural harvesting to propagation and intensive cultivation.

**ER 352: Non-Timber Forest Management and Sustainable Use in Major Forest Zones of BC**

An introduction to biogeoclimatic zones and natural disturbance regimes in BC in relation to the occurrence of important NTFP species and the ecosystems that sustain them. Topics include the impacts of current land use and resource extraction on NTFP occurrence and productivity; and the influence of disturbance classes, biogeoclimatic zones, and current ecological condition on the selection of appropriate NTFP management practices.

**ER 390: Environmental Restoration Project**

In consultation with the Faculty Coordinator, students select a restoration project in an area of intended specialization. May involve a field research component. Final report required. Normally taken in the second or subsequent years of study.

Grading: INP; letter grade.

**ER 400: Seminar in Environmental Restoration**

Units: 0

Seminar presentation in the final year, normally in the field of intended specialization.

Grading: COM or INC.

**ER 411: Advanced Principles and Concepts of Ecological Restoration**

An advanced investigation into the meaning, limits, and significance of ecological restoration, including: how restoration is defined and why clear definitions are important; the role of historical knowledge in restoration; the changing character of restoration in a technological culture; ethical issues in restoration practice; participation and political process; cultural inclusion and the significance of restoration as a cultural mode; the international scope of restoration; and the paradox of design.

Prerequisites: 311 or equivalent, ES 341, or permission of Faculty Coordinator.

**6.6. GRADUATE STUDIES IN THE SCHOOL OF ENVIRONMENTAL STUDIES**

The School of Environmental Studies has long hosted graduate students who were either pursuing interdisciplinary graduate degrees or degrees by special arrangement. In 2007, however, we formalized our graduate program and we now offer both a MA and MSc in Environmental Studies. The graduate program will be relatively small, admitting approximately ten students a year. This makes admission very competitive. Because of this, and because of the specificity of our faculty research strengths, we only admit students who have gained the consent of their potential supervisor and worked out a provisional study plan prior to applying to the School. For more information about the graduate program, see our Graduate Student Handbook or contact the Graduate Advisor, Dr. John Volpe ([esgrad@uvic.ca](mailto:esgrad@uvic.ca)).

**6.7. ENVIRONMENTAL STUDIES CO-OPERATIVE EDUCATION PROGRAMME (CO-OP)**

The Environmental Studies Co-operative Education option provides students with an opportunity to combine their academic studies with four 4-month periods of paid employment in Environmental Studies-related positions in the public, private or non-profit sectors. In the past students have been employed in positions that entailed environmental impact assessments and contaminated sites remediation; environmental policy work with government and private industries; inventories of ecological sensitive areas for the BC Ministry of Aboriginal Affairs; community mapping and restoration of natural systems (watershed assessments, restoration, silviculture and road de-

activation); a study on human activity in National parks for Parks Canada; and trained environmental volunteers for the Capital Regional District (CRD).

We strongly encourage students to consider participating in the Co-op program, as it provides valuable skills and work experience, making the shift from university student to a career much easier to negotiate.

The Co-operative Education Programme in the Faculty of Social Sciences is described at <http://web.uvic.ca/calendar2002/FACS/FoSoS/SSCoEP.html>. Additional general regulations pertaining to co-operative education programmes at the University of Victoria are found on <http://coop.uvic.ca/>.

#### *6.7.1 Admission to the Environmental Studies Co-op Programme*

Entry into the Environmental Studies co-op programme is restricted to full-time students (those taking 6 or more units per term) who are proceeding to a double Major programme offered by the School of Environmental Studies, and whose other Major is in a department within the Faculty of Social Sciences. To be considered for admission to the programme, students normally require a minimum GPA of 5.0 both overall and in Environmental Studies courses. In addition to these grade and course requirements, admission will also be based on a student's interests, abilities and the results of a formal interview.

Students interested in participating in the co-op programme should normally apply in their second year of studies. Applications must be submitted to the Social Sciences Co-op office by the advertised deadlines in September and January. The first work term will normally start eight months after the application deadline. Work terms will alternate with study terms thereafter.

To continue and graduate with a Co-operative Education designation, students must satisfactorily complete four work terms and maintain a minimum GPA of 4.50 in Environmental Studies courses and overall. Each work term is recorded on the student's official transcript of academic record (as COM, N or F). A student may withdraw from the Environmental Studies co-op programme and proceed to graduate from a regular Environmental Studies Major or Minor programme without the co-op designation.

The Environmental Studies Co-op programme is available to both undergraduate and graduate students.

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## **7 SCHOOL OF ENVIRONMENTAL STUDIES POLICIES**

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### **7.1. EQUITY**

The School is committed to maintaining an open and welcoming atmosphere toward students, and the community not just in its policies but also in spirit everyday in the classroom and the School.

## 7.2. CHEATING

SES students are expected to observe the same standards of scholarly integrity as their academic and professional counterparts. Students, who are found to have engaged in unethical academic behaviour, including (but not limited to) the practices described below, are subject to penalty by the University. (See the UVic Calendar for a description of the University's "Policy on Academic Integrity". The Calendar is available on line at: <http://web.uvic.ca/calendar>)

## 7.3. PLAGIARISM

Plagiarism is one of the most serious academic offenses. A student commits plagiarism when he or she:

- submits the work of another person as original work
- gives inadequate attribution to an author or creator whose work is incorporated into the student's work, including failing to indicate clearly (through accepted practices within the discipline such as footnotes, internal references, and the crediting of all verbatim passages through indentations of longer passages or the use of quotation marks) the inclusion of another individual's work
- paraphrases material from a source without sufficient acknowledgement as described above.

Students who are in doubt as to what constitutes plagiarism in a particular instance should consult their course instructor. Students who commit plagiarism are subject to severe penalties.

## 7.4. MULTIPLE SUBMISSION

Multiple submission is the resubmission of work by a student that has been used in identical or similar form to fulfill any academic requirement at UVic or another institution. Students who do so without prior permission from their instructor(s) are subject to penalty.

## 7.5. CLASS ATTENDANCE

To secure (and maintain) your seat in class, attendance is required for the first two weeks of class. If you know you will be unable to attend class during this critical period contact the instructor directly.

## 7.6. GRADING POLICY

The following correlation of letter grade and numerical score will be used in the School of Environmental Studies.

<b>GP</b>	<b>Letter Grade</b>	<b>Range (%)</b>
9	A+	90-100
8	A	85-89
7	A-	80-84
6	B+	75-79
5	B	70-74
4	B-	65-69
3	C+	60-64
2	C	55-59
1	D	50-54
0	F	<50; work not completed

## **7.7. STYLE GUIDE**

A number of departments recommend the use of a style guide appropriate for the discipline, such as the Modern Language Association Style Manual, or the Chicago Manual of Style. Since Environmental Studies at UVic is interdisciplinary, students come to their ES courses using a variety of referencing techniques and styles. As a result most instructors of ES courses require that their students use an accepted academic format and that they be consistent in their use of it throughout their work. Check with your instructor.

Students may want to purchase a copy of the English Department's "A Writer's Guide" available at the UVic Bookstore. The current (third) edition sells for \$6.00.

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## **8 ANSWERS TO FREQUENTLY ASKED QUESTIONS**

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### **8.1. HOW DOES ES DIFFER FROM A MAJOR IN A TRADITIONAL DISCIPLINE?**

The typical University degree programme leads a student to specialize in a particular field. The School of Environmental Studies permits a student to obtain broader, interdisciplinary training along with in-depth study in an area of the student's choice. The Environmental Studies programme emphasizes relationships among specialities and understanding multiple perspectives.

### **8.2. IS ES ONLY FOR ENVIRONMENTALISTS?**

This is not an Environmentalist programme. Our goal is not to teach particular 'Environmental' or 'green' attitudes; it is to expose students to a variety of viewpoints and teach them how to understand, interpret, analyze, and compare different approaches to issues. Students must be willing to consider new ideas and viewpoints different from their own. The SES programme is not designed to promote a particular viewpoint.

### **8.3. DO YOU HAVE TO BE AN ACTIVIST TO TAKE ES?**

While many students are personally committed to the environment, students from a wide variety of backgrounds and future career intentions enrol. On average, half of the graduates receive BSc(science or Geography) degrees, and half BA. As a result classes tend to have a large number of viewpoints expressed.

### **8.4. WHAT IS THE DIFFERENCE BETWEEN ENVIRONMENTAL STUDIES AND ENVIRONMENTAL SCIENCE?**

Environmental Science is one part of the larger field of Environmental Studies. While all Environmental Studies majors need some science background, students may focus their studies on the social sciences, humanities, or fine arts. UVic does not offer a specific Environmental Science degree.

### **8.5. WHY IS INTERDISCIPLINARY STUDY SO IMPORTANT?**

In the real world, people with different specialities must work together to solve problems. Individuals who can understand problems from multiple perspectives and who can communicate with different

constituencies are valuable commodities in today's employment market. Interdisciplinary study, a central part of the SES programme, provides opportunities for learning these skills. By selecting courses from a wide range of disciplines, such as Biology, Geography, Political Science, Philosophy, Sociology, and others, students will better understand the complexity of environmental issues and explore a range of viable solutions.

**8.6. CAN I MAJOR IN ES AND ANOTHER DISCIPLINE AT THE SAME TIME?**

You must! The School of Environmental Studies programme requires that students be registered in another degree granting unit of the University of Victoria.

**8.7. HOW MANY UNITS FOR A DOUBLE MAJOR (BA AND BSc)?**

15 units of courses at the 3rd and 4th year level that have not been used for the second major are required. Since this is a senate rule, no 'double counting' is allowed under any circumstances. Remember, up to 3 courses other than ES at the 3rd and 4th year level can be used in the program. These courses from other departments that are environmentally related are listed in the calendar, and other courses not on the list can be approved by the undergraduate advisor.

**8.8. I DON'T HAVE THE PREREQUISITES. CAN I TAKE ES/ER COURSES ANYWAY?**

The prerequisite course for the ES major and minor is the completion of ES 200 with a B-minimum. While rare exceptions are made, for example for visiting students with special circumstances, UVic students should expect this requirement to be in force given the enrolment pressures on the ES classes. For specialized technical courses in ER and ES, when space permits, permission to enrol may be given by the instructor.

**8.9. CO-REQUISITES-CAN I TAKE ES 200 SIMULTANEOUSLY WITH OTHER ES COURSES?**

The practice is strongly discouraged as ES 200 is a foundation course for those that follow. In the Spring term, students who were unable to register in ES 200 in the fall may be permitted through the advisor to take a limited number of ES courses on a co-requisite basis (usually only one or two depending on student background). Students should note that some of the ES courses have specific pre and co-requisites. Please consult the calendar.

**8.10. DO YOU OFFER ADVISING?**

Yes, please contact the Advising Centre for Humanities, Sciences and Social Sciences for course planning: 250-721-7567, <http://web.uvic.ca/advising/>.

If you have specific ES questions, please contact the Undergraduate Advisor via e-mail, [esadvise@uvic.ca](mailto:esadvise@uvic.ca)

**8.11. CAN I TAKE ER COURSES FOR MY ES DEGREE?**

Yes, with School permission from the Undergraduate Advisor to ensure that there is no overlap in content with other the courses. There is a limit of 3 ER courses that are not cross-listed. Cross-listed courses can be taken for ES credit or ER credit without consultation.

**8.12. CAN I TAKE ES COURSES FOR MY ER DIPLOMA?**

Yes, though permission from the RNS faculty coordinator is required. Requirements for both the diploma and the degree can be satisfied simultaneously with some selections. Consultation with the Faculty Coordinator ([rns@uvic.ca](mailto:rns@uvic.ca)) is recommended in establishing concurrent diploma and degree programs.

**8.13. CAN STUDENTS FROM OTHER DEPARTMENTS TAKE ES/ER COURSES?**

Yes, as space in the section allows. Students with the prerequisites completed must be given priority. ES students completing degree requirements may have preference especially in moving from wait lists.

**8.14. WHEN DO I DECLARE MY MAJOR (HOW DO I DECLARE MY MINOR/MAJOR ES PROGRAM?)**

At the School level there is currently no selection or admission process other than to have 3rd year standing, complete ES 200 with a minimum of a B- and acquire the remaining course credits. Declaring the degree is strictly through the Advising Centres, and can be done as soon as you have completed ES 200. Students should consult their Faculty advising centre regularly in order to make sure that all requirements will have been completed when they apply to graduate.

**8.15. HOW DO I GET TRANSFER CREDITS FOR COURSES TAKEN AT OTHER INSTITUTIONS?**

Transfer applications are strictly the responsibility of the Records Office. They decide which departments will carry out the evaluation, so if you wish to have a course from elsewhere evaluated as Environmental Studies, you should make sure that the Records office knows.

**8.16. MAY I AUDIT A COURSE?**

Only with the permission of the instructor. Since many courses involve group work that has a group evaluation, auditing is often not possible.

**8.17. DOES UVIC OFFER AN MA OR MSc IN ENVIRONMENTAL STUDIES?**

Yes, we offer both an MA and MSc in Environmental Studies. See the Graduate Handbook or contact the Graduate Advisor for more information ([esgrad@uvic.ca](mailto:esgrad@uvic.ca)).

**8.18. HOW CAN I FIND OUT ABOUT SCHOLARSHIPS AND BURSARIES?**

Consulting Student Awards and Financial Aid is the best starting point. Some undergraduate awards and bursaries are specifically for SES students, for example the Vicky Husband Scholarship and the Lorene Kennedy Bursaries. Applications for the Bursaries are usually due near the start of the school year, and these are handled by Student Awards and Financial Aid. Scholarship awards specific to the School are advertised in April, with application deadlines on or around May 1.

**8.19. DO STUDENTS HAVE A CLUB/COURSE UNION?**

Yes, the Environmental Studies Students Association (ESSA) is registered with the UVSS (University of Victoria Students' Society) and has operated in the School for twenty years.

**8.20. IS THERE AN ES Co-OP?**

Yes: ES students can either apply to Co-op through their second major or through ES. Interested students should contact the Social Sciences Co-op Office. It is an excellent program, and we strongly encourage ES students to take advantage of it.

**8.21. WHAT CAN I DO WITH MY ES DEGREE?**

First, remaining a double major, or major/minor program has ensured that all students have another major. Often students find the two-degree approach is complementary, adding additional opportunities over a single degree. That has meant considerable success in students going on to graduate schools or professional degrees (law). As well, students seek opportunities with government, ENGOs and the private sector, where once again having a background in both ES and a second area has often proved to be an advantage. The degree is intended to provide an education, with skills in writing, problem solving and oral presentation being developed. These are valuable in a number of life pathways.

**8.22. SPEAKING OF JOBS, WHAT KIND OF JOB CAN I GET WITH AN ES MAJOR?**

Environmental Studies graduates work in a variety of capacities in every sector of the workplace, because environmental issues face every business, agency and institution, and any environmental issue is inevitably intertwined with many other environmental disciplines.

As with any major, your success in the job market depends primarily on your individual skills and desire to succeed. The kind of job you get will depend on your specific area of interest and how well you have developed the thinking, communication, and problem-solving skills necessary to be successful. Also keep in mind that the typical person changes jobs at least five times during his or her lifetime; rapid changes in society mean that the environmentally-related jobs you will be pursuing fifteen years from now probably don't exist yet.