

# ENVIRONMENTAL TOXICOLOGY – SPECIALIZATION (SCIENCE) – BACHELOR OF SCIENCE (HONOURS)

**Subject:** Administered by the School of Environmental Studies.

**Plan:** Consists of 102.00 units as described below.

**Plan Code:** ETOX-S

**Program:** The Plan, alone, or in combination with a Minor in another subject, and with sufficient electives to total 120.00 units, will lead to a Bachelor of Science (Honours) Degree.

Code	Title	Units
<b>1. Core</b>		
– CORE SCIENCE –		
<b>A. Complete the following:</b>		
BIOL 102	Fundamentals of Biology: Molecular and Cell Biology	3.00
BIOL 103	Fundamentals of Biology: Organisms to Ecosystems	3.00
<b>B. Complete 6.00 units from the following:</b>		<b>6.00</b>
CHEM 109 & CHEM 110	General Chemistry I: From Atoms to Matter and General Chemistry II: Thermodynamics and Kinetics	
or		
CHEM 112	General Chemistry	
<b>C. Complete the following:</b>		
GPHY 101	Human Geography	3.00
GPHY 102	Physical Geography and Natural Resources	3.00
<b>D. Complete 3.00 units from the following:</b>		<b>3.00</b>
GEOL 104	The Dynamic Earth	
GEOL 107	History of Life	
<b>E. Complete 6.00 units from the following:</b>		<b>6.00</b>
MATH 120	Differential and Integral Calculus	
or		
MATH 121	Differential and Integral Calculus	
or		
MATH 123 & MATH 124	Differential and Integral Calculus I & Differential and Integral Calculus II	
– CORE ENVIRONMENTAL TOXICOLOGY –		
<b>F. Complete the following:</b>		
BIOL 200	Diversity of Life	3.00
BIOL 205	Mendelian and Molecular Genetics	3.00
BIOL 212	Scientific Methods in Biology	3.00
BIOL 243	Introduction to Statistics	3.00
<b>G. Complete 9.00 units from the following:</b>		<b>9.00</b>

CHEM 213	Introduction to Chemical Analysis	
CHEM 281	General Organic Chemistry I (with Virtual Laboratory)	
CHEM 282	General Organic Chemistry II	
or CHEM 285	General Organic Chemistry II (with Virtual Laboratory)	
<b>H. Complete the following:</b>		
ENSC 201	Environmental Toxicology and Chemical Risks	3.00
<b>I. Complete the following:</b>		
CHEM 326	Environmental and Green Chemistry	3.00
<b>J. Complete the following:</b>		
ENSC 425	Ecotoxicology	3.00
<b>K. Complete the following:</b>		
PHAR 416	Xenobiotic Disposition and Toxicity	3.00
– CORE SOCIAL SCIENCES AND HUMANITIES –		
<b>L. Complete the following:</b>		
ENSC 103	Environment and Sustainability	3.00
<b>M. Complete the following:</b>		
ENSC 230	Principles of Sustainability	3.00
ENSC 330	Applications of Sustainability	3.00
<b>N. Complete 6.00 units the following:</b>		<b>6.00</b>
ENSC 430	Honours Projects in Environmental Sustainability	
ENSC 501	Independent Environmental Study	
<b>2. Option</b>		
<b>A. Complete 3.00 units from the following:</b>		<b>3.00</b>
GEOL at any level		
<b>B. Complete 3.00 units from the following course list:</b>		<b>3.00</b>
ENSC_Specialization_Options_B		
<b>C. Complete 3.00 units from the following course list:</b>		<b>3.00</b>
ENSC_Interdisciplinary_Humanities		
<b>D. Complete 6.00 units from one of the following options:</b>		<b>6.00</b>
<b>i. Biochemistry, Molecular Biology, or Cell Biology Option:</b>		
a. ETOX_Molecular and Cell Biology		
<b>ii. Physiology Option:</b>		
a. ETOX_Physiology		
<b>iii. Ecology Option:</b>		
a. ETOX_Ecology		
<b>E. Complete 12.00 units from the following course list:</b>		<b>12.00</b>



ETOX_Options	
<b>Electives and/or Other Plan Requirements</b>	<b>18.00</b>
<b>Total Units</b>	<b>120.00</b>

### 3. Substitutions

A. A course in statistics, as approved by the Chair of Undergraduate Studies, may be substituted for BIOL 243/3.0 in Core **1.F**.

B. ENSC 502/12.0 may be substituted for Core **1.N**. and a further 6.00 units in electives and/or Plan requirements as approved by the Chair of Undergraduate Studies.

### 4. Notes

A. Students are strongly advised to complete all requirements for 100- and 200-level courses in their first and second year, paying special attention to prerequisites and corequisites needed in 300- and 400-level courses.

B. BIOL 206/3.0 is highly recommended as it is a prerequisite for upper-year Ecology courses (e.g., BIOL 300, 323).

C. A maximum of 6.00 units from courses offered by other Faculties and Schools may be counted toward the program and/or Plan requirements. This includes courses in BMED, COMM, GLPH, HSCI, LAW, NURS, and courses by Smith Engineering.

## Environmental Toxicology Course Lists

The following lists may contain courses offered through other Departments. In accordance with Academic Regulation **2.6** (Access to Classes), students do not have enrolment priority in all of these courses. Access to these courses may only be made available during the Open Enrolment period, and then only if space permits.

### ENSC\_Specialization\_Options\_B

Code	Title	Units
BIOL 335	Limnology and Aquatic Ecology	3.00
ENSC 307	Marine Environmental Issues	3.00
ENSC 201	Environmental Toxicology and Chemical Risks	3.00
ENSC 301	Environmental Assessment	3.00
ENSC 320	Wildlife Issues in a Changing World	3.00
ENSC 407	Global Water Resources: Challenges and Opportunities	3.00
ENSC 408	Wildfire Science and Management	3.00
ENSC 425	Ecotoxicology	3.00
ENSC 480	Special Topics in Environmental Science	3.00
GEOL 106	Environmental Geology and Natural Hazards	3.00

GEOL 107	History of Life	3.00
GEOL 200	Oceanography	3.00
GPHY 207	Principles of Biogeography	3.00
GPHY 209	Weather and Climate	3.00
GPHY 304	Northern and Arctic Environments	3.00
GPHY 312	Watershed Hydrology	3.00
GPHY 314	Climate Change	3.00
GPHY 317	Soil, Environment, and Society	3.00
GPHY 318	Advanced Biogeography	3.00
GPHY 319	Contemporary Energy Resources	3.00

### ENSC\_Interdisciplinary\_Humanities

Code	Title	Units
CLST 214	Ancient Science	3.00
DEVS 220	Introduction to Indigenous Studies	3.00
DEVS 221	Indigenous Studies II - Resistance and Resurgence	3.00
ENGL 113	Reading for the Planet	3.00
ENGL 218	Introduction to Indigenous Literatures in Canada	3.00
ENGL 276	Literature and the Environment	3.00
INDG 101	Indigenous Knowledges and Perspectives	3.00
PHIL 203	Science and Society	3.00
PHIL 293	Humans and the Natural World	3.00
PHIL 493	Ethics and the Environment	3.00
RELS 235	Religion and Environment	3.00

### ETOX\_Molecular and Cell Biology

Code	Title	Units
BCHM 218	Molecular Biology	3.00
BIOL 330	Cell Biology	3.00
BIOL 334	Comparative Biochemistry	3.00
BIOL 403	Experimental Techniques in Biology	3.00
BIOL 404	Techniques in Molecular Biology	3.00
BIOL 430	Molecular Genetics of Development	3.00
BIOL 502	Selected Topics in Biotechnology	3.00
BIOL 506	Selected Topics in Integrative Biology	3.00
BIOL 508	Selected Topics in Cell Biology	3.00
MICR 360	Immunology	3.00

### ETOX\_Physiology

Code	Title	Units
BIOL 322	Environmental Physiology of Animals	3.00
BIOL 339	Animal Physiology	3.00
BIOL 341	Plant Physiology	3.00

BIOL 401	Experimental Approaches to Animal Physiology	3.00
BIOL 402	Experiments in Plant Physiology	3.00

### ETOX\_Ecology

Code	Title	Units
BIOL 300	Ecology	3.00
BIOL 323	Vertebrate Diversity and Evolution	3.00
BIOL 335	Limnology and Aquatic Ecology	3.00
BIOL 410	Ecology of Lakes and Streams	3.00
BIOL 416	Terrestrial Ecosystems	3.00
BIOL 509	Limnological Environmental Studies	3.00
BIOL 510	The Biology of Sustainability	3.00
BIOL 527	Paleolimnology and Global Environmental Change	3.00

### ETOX\_Options

Code	Title	Units
BIOL at the 300-level or above		
CHEM at the 300-level or above		
ENSC at the 300-level or above		
EPID at the 300-level or above		
GEOL at the 300-level or above		
GPHY at the 300-level or above		