



**I. COURSE DESCRIPTION:**

This is an introductory course to provide students with an understanding of ecology as it relates to natural environments. The course covers a wide range of topics that examine the interactions between organisms and their physical environment. A combination of lectures, labs and field surveys provide insight into the structure and function of ecosystems in general; but emphasize forest and freshwater ecosystems in Canada

**II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:**

Upon successful completion of this course, the student will demonstrate the ability to:

1. Identify the 6 attributes of an ecosystem and describe their implications  
Potential Elements of the Performance:
  - Distinguish between biotic and abiotic components of an ecosystem
  - Describe trophic relationships between autotrophs, heterotrophs, and decomposers in energy transfer and material movement
  - Distinguish between microconsumers and macroconsumers
  - Identify the 3 major abiotic components of ecosystems and their contribution to ecosystem function; including inorganic material, organic material and climatic factors
  - Demonstrate an understanding of complexity, interaction and interdependence, lack of spatial dimension and ecosystem dynamics as they relate to ecosystem structure and function
  
2. Describe the role of bacteria as they relate to the structure and function of ecosystems  
Potential Elements of the Performance:
  - Describe key characteristics of bacteria
  - Demonstrate techniques for the identification of bacteria including gram staining, culture of agar plates and microscopic examination of colony characteristics
  - Discuss the importance of various groups of bacteria in relation to decomposition, nutrient cycling, as pathogens and as chemo and photoautotrophs
  
3. Demonstrate the significance of ecological energetics  
Potential Elements of the Performance:
  - Describe biotic and abiotic sources of energy

- Distinguish between and provide examples of food webs, food chains, and ecological pyramids
  - Describe the ecological relationship between photosynthesis and respiration
  - Classify organisms by trophic function
  - Distinguish between gross, primary, net and secondary productivity
4. Discuss the role of major abiotic factors in natural ecosystems  
Potential Elements of the Performance:
- Describe characteristics of light and their relationship to organisms
  - Provide examples of positive and negative influences of: temperature, photoperiod, solar radiation, humidity, precipitation, wind, soils, fire and topography
  - Demonstrate how insects use heat accumulation information to break diapause
  - Be able to calculate degree day values
  - Distinguish between and provide examples of geochemical and biogeochemical cycling
  - Briefly describe the major steps in the following nutrient cycles: nitrogen, carbon and hydrological
  - Identify symptoms of deficiency and /or excess of each macronutrient
5. Apply the concepts of ecological tolerance, niche and habitat  
Potential Elements of the Performance:
- Define niche and habitat
  - Demonstrate the effect of ecological tolerance limits in relation to range and distribution
  - Provide examples of terrestrial and aquatic habitat variation and how organisms adapt to occupy specific niches
  - Describe adaptive strategies to avoid niche overlap
- Describe the niche, habitat, range and distribution of select species
6. Discuss various general characteristics of populations  
Potential Elements of the Performance:
- Differentiate between the following symbiotic relationships: predation, parasitism, mutualism, commensalism and disease and provide examples
  - Differentiate between interspecific and intraspecific competition and provide example
  - Explain the carrying capacity concept
7. Discuss characteristics of community structure and species interaction  
Potential Elements of the Performance:

- Provide examples of community stratification in terrestrial and aquatic ecosystems
- Distinguish between vertical and horizontal stratification and discuss their significance in biodiversification
- Explain the evaluation of biodiversity at the species, community and landscape level
- Describe ecological characteristics of ecotones
- Describe the ecological relationships between terrestrial and aquatic interfaces
- Describe the stages of ecological succession using various examples
- Distinguish between primary and secondary succession
- Describe how communities respond to disturbance such as wind, fire, timber harvesting, flooding, disease and erosion
- Conduct an ecological survey of a forest community including: vertical stratification, community composition, habitat values and successional sere

### III. TOPICS:

1. The scope of ecology
2. Ecosystem characteristics
3. Trophic relationships and ecological energetics
4. Abiotic influences in ecosystems
5. Ecological characteristics of species
6. Characteristics Ecological of populations
7. Community structure
8. Community succession
9. Biodiversity

### IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Zuchlinski, J.A. 2009. Ecology Lab Manual  
 Zuchlinski, J.A. 2009. Ecology Study Guide

&lt;insert course name here&gt;

&lt;insert course code number here&gt;

**V. EVALUATION PROCESS/GRADING SYSTEM:**

Mid-term Test	20%
Final Test	20%
Assignments	10%
Lab Reports	<u>50%</u>
<u>TOTAL</u>	100%

The following semester grades will be assigned to students:

<u>Grade</u>	<u>Definition</u>	<u>Grade Point Equivalent</u>
A+	90 – 100%	4.00
A	80 – 89%	3.00
B	70 - 79%	2.00
C	60 - 69%	1.00
D	50 – 59%	0.00
F (Fail)	49% and below	
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical placement or non-graded subject area.	
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.	
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.	
NR	Grade not reported to Registrar's office.	
W	Student has withdrawn from the course without academic penalty.	

**VI. SPECIAL NOTES:**

&lt;insert course name here&gt;

&lt;insert course code number here&gt;

Disability Services:

If you are a student with a disability (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Disability Services office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

Retention of Course Outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Communication:

The College considers **WebCT/LMS** as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the **Learning Management System** communication tool.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Code of Conduct*. Students who engage in academic dishonesty will receive an automatic failure for that submission and/or such other penalty, up to and including expulsion from the course/program, as may be decided by the professor/dean. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Course Outline Amendments:

The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Substitute course information is available in the Registrar's office.

<include any other special notes appropriate to your course>

&lt;insert course name here&gt;

&lt;insert course code number here&gt;

*<include the following paragraph if there is a placement or clinical component to this course. You may wish to consult with your chair.>*

### Tuition Default

Students who have defaulted on the payment of tuition (tuition has not been paid in full, payments were not deferred or payment plan not honoured) as of the first week of November will be removed from placement and clinical activities. This may result in loss of mandatory hours or incomplete course work. Sault College will not be responsible for incomplete hours or outcomes that are not achieved or any other academic requirement not met as of the result of tuition default. Students are encouraged to communicate with Financial Services with regard to the status of their tuition prior to this deadline to ensure that their financial status does not interfere with academic progress.

## **VII. PRIOR LEARNING ASSESSMENT:**

Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit Form from the program coordinator (for course-specific courses), or the course coordinator (for general education courses), or the program's academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question.

Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio.