

I. COURSE DESCRIPTION:

This course provides the student with an introduction to the biology and ecology of aquatic and terrestrial insects and related invertebrates. Emphasis is placed on the development of identification skills in the laboratory.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

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

1. Collect, preserve, process, and present insect specimens from both terrestrial and aquatic environments in accordance with scientific standardsPotential Elements of the Performance:

- Demonstrate various tools and methods of collecting insect specimens including nets, traps and baits.
- Collect and mount adult insects representing at least 8 Orders and appropriately record collection information
- Collect and preserve immature insects and appropriately record collection information

2. Identify 15 Orders and 20 Families of adult and immature insects using taxonomic keys and microscopic techniquePotential Elements of the Performance:

- Demonstrate use of taxonomic keys
- Demonstrate use of the binocular microscope
- Sort selected specimens into appropriate taxonomic groupings

3. Recognize by Family/Genus/Species selected insect species used as indicators of environmental qualityPotential Elements of the Performance:

- Identify 15 selected Hymenoptera
- Identify 15 selected Lepidoptera
- Identify 10 selected Coleoptera
- Identify 10 selected Hemiptera/Homoptera
- Identify 5 selected Diptera

4. Describe the biology and ecology of insectsPotential Elements of the Performance:

- Identify and describe the function of external structures of insects
- Describe the significant anatomical features which distinguish insects from other arthropods
- Describe the significant anatomical features which distinguish insect Orders
- Distinguish between various types of insect metamorphosis
- Demonstrate correct use of entomological terminology presented in the course
- For selected species; research and describe their life cycle and optimal habitat requirements.
- Describe positive contributions that insects make to the health and sustainability of natural environments
- Prepare properly labeled scientific drawings from microscopic examinations of specimens

5. Describe procedures used in the monitoring and control of pest speciesPotential Elements of the Performance:

- Describe the objectives of environmental monitoring in general
- Describe monitoring procedures for select insect species
- Conduct a field survey to assess biodiversity

III. TOPICS:

1. Classification of Phylum Arthropoda
2. Insect Life Cycles
3. Internal and external anatomy of insects
4. Ecological importance of insects
5. The orders Odonata, Plecoptera, Ephemeroptera, Trichoptera, Orthoptera, Megaloptera, Blattodea, Isoptera, Mantodea, Neuroptera, Hymenoptera, Diptera, Coleoptera, Heteroptera and Lepidoptera
6. Techniques in the collection and monitoring of insects

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Borror, D.J. ,C.A. Triplehorn and N.F. Johnson. 1989. An introduction to the study of insects. 6th Ed. Harcourt Brace College Publishers. 875 pp.

V. EVALUATION PROCESS/GRADING SYSTEM:

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|---------------------------|-------------|
| Lab Participation | 40% |
| Assignments | 30% |
| Lab Identification sheets | 15% |
| Tests | 15% |
| TOTAL | 100% |

Note 1: The lab participation mark is based on 100% attendance. Missed classes will result in deductions from the 40% participation mark as follows:

- 1st missed class -5%
- 2nd missed class -5%
- 3rd missed class -10%
- 4th missed class -10%
- 5th missed class -10%

Note 2: It is impossible to do this course without the required textbook. If you do not have this book by the third week of the course you will not be allowed to continue in the course.

The following semester grades will be assigned to students:

| Grade | <u>Definition</u> | <i>Grade Point Equivalent</i> |
|--------------|--------------------------|-------------------------------|
| 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 | |

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| 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. |

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| 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. |

If a faculty member determines that a student is at risk of not being academically successful, the faculty member may confidentially provide that student's name to Student Services in an effort to help with the student's success. Students wishing to restrict the sharing of such information should make their wishes known to the coordinator or faculty member.

VI. SPECIAL NOTES:

Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.

VII. COURSE OUTLINE ADDENDUM:

The provisions contained in the addendum located in D2L and on the portal form part of this course outline.