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**SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY**

**SAULT STE. MARIE, ONTARIO**



**COURSE OUTLINE**

**COURSE TITLE:** Forest Health

**CODE NO. :** NRT243 **SEMESTER:** F13

**PROGRAM:** Forest Conservation Technician

**AUTHOR:** Jerry A. Zuchlinski, M.Sc.

**DATE:** June 2013 **PREVIOUS OUTLINE DATED:**

**APPROVED:** "C. Kirkwood"

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Dean

\_\_\_\_\_  
DATE

**TOTAL CREDITS:** 3

**PREREQUISITE(S):** None

**HOURS/WEEK:** 4

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*For additional information, please contact Colin Kirkwood, Dean,  
School of Natural Environment and Outdoor Studies  
(705) 759-2554, Ext. 2688*

**I. COURSE DESCRIPTION:**

This course introduces the student to the disciplines of pathology and entomology through an examination of a variety of biotic and abiotic factors that impact on the health of forest environments. Particular emphasis is placed on the identification, biology and ecology of insects and fungi that are associated with tree species, Abiotic stresses related to temperature, precipitation, soil conditions, etc. are examined in terms of their affect on physiological processes and the recognition of manifested symptoms... .

**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 in accordance with scientific standards  
Potential Elements of the Performance:
  - Demonstrate various tools and methods of collecting insect specimens including nets, traps and baits.
2. Identify adult insects from a variety of Orders to the Family level using taxonomic keys and microscopic technique

Potential Elements of the Performance:

- Demonstrate use of taxonomic keys
  - Demonstrate use of the binocular microscope
  - Identify selected specimens into appropriate taxonomic groupings
3. Recognize a selected number of harmful and beneficial insects associated with commercial tree species.  
Potential 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 insects in general and selected harmful and beneficial species

Potential 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, the type of damage caused and general importance to the harvesting industry
  - Categorize and recognize different types of damage caused by insects
  - Describe positive contributions that insects make to the health and sustainability of forest environments
  - Prepare properly labeled scientific drawings from microscopic examinations of specimens
5. Describe procedures used in the monitoring and control of pest species

Potential Elements of the Performance:

- Describe the objectives of the Forest Disease and Insect Survey and pest monitoring in general
  - Describe monitoring procedures for select forest pest species
  - Describe various methodologies for pest management including; cultural, chemical and biological treatments
  - Describe integrated control strategies for select forest pest species
  - Conduct field surveys to assess insect damage potential
6. List and describe abiotic stress factors

Potential Elements of Performance

- List abiotic factors that affect trees
- Describe the damage and impacts of abiotic stresses
- Suggest management techniques to minimize abiotic stress

7. Describe select biotic diseases of trees

.Potential Elements of Performance

- List the causal agents of tree diseases
- Describe 6 categories of biotic induced diseases
- Describe the life cycle, damage caused and significance of select tree diseases
- Suggest management strategies to minimize disease impacts

- Prepare drawings of the reproductive structures of fungi

8. Use signs and symptoms to identify diseases

Potential Elements of Performance

- Distinguish between signs and symptoms
- Identify select fruiting structures of fungi
- Categorize symptoms used in disease identification

**III. TOPICS:**

1. Classification of Phylum Arthropoda
2. Insect Life Cycles
3. Internal and external anatomy of insects
4. Economic and ecological importance of insects
5. The orders Hymenoptera, Diptera, Coleoptera, Heteroptera and Lepidoptera
6. Integrated pest management
7. An Introduction to forest pathology
8. Abiotic pathogens.
9. Symptomology
10. Biotic Pathogens

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

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

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

1.Lab Participation	40%
2. Lab assignments	20%
3. 2 Lab tests	20%
4. Theory Assignments	20%
<b>TOTAL</b>	<b>100%</b>

**Note: The lab participation mark is based on 100% attendance. Each class missed will result in a 5% deduction from the 40% unless appropriate reason can be provided with advance notice.**

The following semester grades will be assigned to students:

<b>Grade</b>	<b><u>Definition</u></b>	<i>Grade Point Equivalent</i>
A+	90 – 100%	4.00
A	80 – 89%	
B	70 - 79%	3.00
C	60 - 69%	2.00
D	50 – 59%	1.00
F (Fail)	49% and below	0.00
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:**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.

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.

Prior Learning Assessment:

Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question. Please refer to the Student Academic Calendar of Events for the deadline date by which application must be made for advance standing.

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

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

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.

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*. A professor/instructor may assign a sanction as defined below, or make recommendations to the Academic Chair for disposition of the matter. The professor/instructor may (i) issue a verbal reprimand, (ii) make an assignment of a lower grade with explanation, (iii) require additional academic assignments and issue a lower grade upon completion to the maximum grade "C", (iv) make an automatic assignment of a failing grade, (v) recommend to the Chair dismissal from the course with the assignment of a failing grade. 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.

Student Portal:

The Sault College portal allows you to view all your student information in one place. **mysaultcollege** gives you personalized access to online resources seven days a week from your home or school computer. Single log-in access allows you to see your personal and financial information, timetable, grades, records of achievement, unofficial transcript, and outstanding obligations. Announcements, news, the academic calendar of events, class cancellations, your learning management system (LMS), and much more are also accessible through the student portal. Go to <https://my.saultcollege.ca>.

Electronic Devices in the Classroom:

Students who wish to use electronic devices in the classroom will seek permission of the faculty member before proceeding to record instruction. With the exception of issues related to accommodations of disability, the decision to approve or refuse the request is the responsibility of the faculty member. Recorded classroom instruction will be used only for personal use and will not be used for any other purpose. Recorded classroom instruction will be destroyed at the end of the course. To ensure this, the student is required to return all copies of recorded material to the faculty member by the last day of class in the semester. Where the use of an electronic device has been approved, the student agrees that materials recorded are for his/her use only, are not for distribution, and are the sole property of the College.

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. *<Optional: It is the departmental policy that once the classroom door has been closed, the learning process has begun. Late arrivers will not be granted admission to the room.>*

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 *<choose November, March, or June>* 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.