

## NRMT/BIOL 3217 FOREST ENTOMOLOGY

### COURSE OUTLINE Winter 2020

**Lectures:** Dr. Don Henne, BB 1003E – Ph. 343-8655 or dhenne@lakeheadu.ca

**Office Hours:** Afternoons, most days.

**Teaching Assistants:** Steven Beery (sbeery@lakeheadu.ca) and Amber Fredenburg, (afredenb@lakeheadu.ca)

**Lecture Schedule:** Mondays and Wednesdays 11:30-12:30pm, RB 3046

**Lab Schedule:** Mondays 2:30-5:30pm, BB1061

### INTRODUCTION

Insects are among the most diverse and important organisms on the planet, but few people recognize or appreciate the benefits that insects bring to our existence. In managed forestry systems, as in managed agricultural systems, there are certain insects that are serious pests of all parts of forest trees. The ability to properly manage these pests requires correct identification of the pest, understanding their biology and ecology, effectively applying methods of sampling and monitoring, and applying knowledge of different control strategies.

### LEARNER OUTCOMES

This course examines the theory and practice of Forest Entomology. In this course, you will become familiar with the major insect orders and families. Emphasis will be placed on the biology, ecology, and damage caused by insect species that threaten or cause damage to forests. You will become familiar with current methods and strategies for controlling these insects and limiting the damage they cause to forests. Laboratory periods will focus on insect anatomy and identification. At the end of the course you should be able to identify and recognize select forest insect orders, families, and species.

### EVALUATION

Lecture midterm exam	15%
Insect research assignment	10% (see below)
Lecture final exam	30% (comprehensive)
Laboratory Quizzes (4)	20%
Laboratory midterm exam	10%
Laboratory final exam	15%

**REQUIRED TEXTS:** None required.

## ORGANIZATION OF THE COURSE

Lecture schedule/outline (subject to change)

Date	Tentative Lecture Topic
January 6	Syllabus. Introduction to forest entomology
January 8	External insect anatomy
January 13	Internal insect anatomy
January 15	Insect physiology
January 20	Insect reproduction
January 22	Insect ecology
January 27	Insect ecology and biodiversity
January 29	Insect population dynamics
February 3	Insect population sampling and monitoring
February 5	Insect population control and IPM
February 10	<b>Midterm Exam</b>
February 12	Weather and insects
February 17/19	<b>No classes: February study break</b>
February 24	Defoliating insects - Lepidoptera
February 26	Insects as forest disturbance agents - spruce budworm
March 2	Cone and seed insects
March 4	Tip, shoot, and regeneration insects – weevils (final drop date)
March 9	Invasive forest insects
March 11	Invasive forest insects
March 16	Wood boring insects
March 18	Bark beetles
March 23	Sucking insects
March 25	Leafmining insects
March 30	Gall insects
April 1	Final exam review

Laboratory schedule/outline (subject to change)

Date	Tentative Laboratory Topic
January 13	The dissection microscope and external insect anatomy
January 20	Arthropod classification and cover exopterygota (incomplete metamorphosis)
January 27	<b>Laboratory Quiz #1</b> and cover endopterygota (complete metamorphosis)
February 3	Immature insects
February 10	<b>Laboratory Quiz #2</b> and cover defoliating insects and hardwood defoliators
February 17	<b>No laboratory: February study break</b>
February 24	Mid-term laboratory exam
March 2	Softwood defoliators
March 9	<b>Laboratory Quiz #3.</b> Cover leaf mining, sap sucking, and gall forming insects
March 16	<b>Laboratory Quiz #4.</b> Cover xylem and phloem borers
March 23	Review lab
March 30	<b>Laboratory final exam</b>

## **Insect research assignment (Due April 3<sup>rd</sup>)**

Students will be required to conduct a brief literature review on any forest insect pest of interest. This review should include information about the taxonomy, biology, and ecology of the pest, its hosts and damage caused, and its control. Length should be 3-5 pages (not including title page and references), double-spaced, 2.5 cm margins, 12-point font.

**DO NOT** use Wikipedia or other internet webpages as a primary source of information. Find actual journal articles using Google Scholar (for example), review articles, and books from the library. Learn how to use literature search engines to find information. Also, remember that plagiarism can be easily identified using Grammarly and other plagiarism detecting software (**see below for link to our University policies regarding plagiarism and other forms of academic dishonesty**).

### **Late assignments**

All assignments in the course must be handed in by 11:59 pm on the assigned due date. Late assignments will be accepted past the due date at a penalty of 5%/day.

### **Important dates**

Final date to register (add): Friday January 17, 2020

Final date for withdrawal: Friday March 6, 2020

Examination period: April 6-19, 2020

Marks due: Friday April 23, 2020

### **Other important dates**

Family Day: Monday February 17, 2020

February break: Monday February 17 – Friday February 21, 2020

Winter term study break: April 4-5, 2020

Good Friday: Friday April 10, 2020

Easter Monday: Monday April 13, 2020

### **Appendix: University policies**

Other University policies governing plagiarism and other forms of academic dishonesty can be found at the following link:

<http://navigator.lakeheadu.ca/Catalog/ViewCatalog.aspx?pageid=viewcatalog&catalogid=24&chapterid=6364&loaduserredits=False>