



# **Forest Entomology**

## **- NRMT/BIOL 3217 -**

### **Course Syllabus (Winter 2022)**

**Instructor:** Dr. Seung-Il Lee

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**Office hours:** By appointment on Zoom

**Teaching Assistant (TA):** Vianney Cupiche (vcupiche@lakeheadu.ca; Office: BB1001C)

**Lecture (BIOL/NRMT-3217L-WA/WDE):** Wednesday & Friday 11:30 AM – 12:30 PM (RC1002)

**Lab (BIOL/NRMT-3217L-W1/WD1):** Thursday 2:30 PM – 5:30 PM (BB1006)

**Lab (BIOL/NRMT-3217L-W2/WD2):** Monday 2:30 PM – 5:30 PM (BB1006)

#### **Course Description:**

Insects comprise a great diversity of animal life on Earth, and provide important values for environmental and animal health including human well-being. This course will explore the rich diversity of forest insects, and provide comparative morphology, life history, ecology, and damages caused by pest species in forests.

#### **Course Objectives:**

- To illustrate the biology, natural history and diversity of forest-dwelling insects in a forestry context and provide basic understanding of the classification system used to store and organize information about them.
- To provide an opportunity to learn to identify insects common in Canadian forests and to recognize damage associated with common pest species.
- To review the general methods for managing forest pest insects and explore the general philosophy of integrated pest management as is appropriate for modern sustainable forest management.
- To foster appreciation for the significance of entomological research in the context of forest management.

## Lecture Schedule:

Lecture	Date	Topic
1	Jan. 19	Syllabus & Introduction to Forest Entomology
2	Jan. 21	Arthropod Classification and Relationships
3	Jan. 26	Insect diversity I
4	Jan. 28	Insect diversity II
5	Feb. 2	External Structure & Function
6	Feb. 4	Internal Structure & Function
7	Feb. 9	Reproduction
8	Feb. 11	Nervous System
9	Feb. 16	Defoliators: Lepidoptera
10	Feb. 18	Defoliators: Sawflies
Reading Week (Feb. 21-25): No Class		
11	Mar. 2	Spruce Budworms: Canada's No.1 defoliator
12	Mar. 4	<b>Midterm Exam</b>
13	Mar. 9	Seed and Cone Pests
14	Mar. 11	Young Stand Pests
15	Mar. 16	Wood Borers
16	Mar. 18	Bark Beetles
17	Mar. 23	Sucking Insects and Leaf Miners
18	Mar. 25	Insect-Plant Interactions
19	Mar. 30	Insect Population Dynamics
20	Apr. 1	Integrated Pest Management
21	Apr. 6	Insects and Silviculture
22	Apr. 8	Insect Biodiversity and Forest Management
		<b>Final Exam</b> (The date will be announced later)

## Laboratory Schedule:

Lab	Date	Topic
1 (W2)	Jan. 24	External Morphology
1 (W1)	Jan. 27	External Morphology
2 (W2)	Jan. 31	Insect Classification
2 (W1)	Feb. 3	Insect Classification
3 (W2)	Feb. 7	Endopterygote Larvae ( <b>Lap Report 1: Due date Feb. 8</b> )
3 (W1)	Feb. 10	Endopterygote Larvae ( <b>Lap Report 1: Due date Feb. 11</b> )
4 (W2)	Feb. 14	Lepidoptera I
4 (W1)	Feb. 17	Lepidoptera I
Reading Week (Feb. 21-25): No Lab		
5 (W2)	Feb. 28	Lepidoptera II
5 (W1)	Mar. 3	Lepidoptera II
6 (W2)	Mar. 7	<b>Midterm Exam</b> + Coleoptera I
6 (W1)	Mar. 10	<b>Midterm Exam</b> + Coleoptera I
7 (W2)	Mar. 14	Coleoptera II ( <b>Lap Report 2: Due date Mar. 15</b> )
7 (W1)	Mar. 17	Coleoptera II ( <b>Lap Report 2: Due date Mar. 18</b> )
8 (W2)	Mar. 21	Hymenoptera
8 (W1)	Mar. 24	Hymenoptera
9 (W2)	Mar. 28	Pests of Shrubs, Ornamentals & Wood Products ( <b>Lap Report 3: Due date Mar. 29</b> )
9 (W1)	Mar. 31	Pests of Shrubs, Ornamentals & Wood Products ( <b>Lap Report 3: Due date Apr. 1</b> )
10 (W2)	Apr. 4	<b>Final Exams</b>
10 (W1)	Apr. 7	<b>Final Exams</b>

## Mark Weightings:

- Final percentage marks will be calculated as follows.

	Exam	Date	Percentage
<b>Lecture</b>	Written Assignment	Apr. 9	10%
	Midterm Exam	Mar. 4	20%
	Final Exam	TBA	30%
<b>Lab</b>	Lap Report	See above Lab Schedule	10%
	Midterm Exam	Mar. 7 (W2) Mar. 10 (W1)	10%
	Final Exam	Apr. 4 (W2) Apr. 7 (W1)	20%

- Written Assignment (Due Apr. 9):** Students must choose one of the following insect species (Listed below), and provide a brief literature review. The review should include scientific classification, morphology, biology, life-history and environmental impacts or management options of the species. Comparisons of similar species are also encouraged to be presented. This written assignment is required for successful completion of NRMT/BIOL 3217. The paper must be typed in double-spaced text with font 'Calibri' size no smaller than 12, and page margins > 2.5 cm. Length should be 4-5 pages (not including title page and references). You can add photos in the paper up to 4 with proper credits.

List of Species
1. Mountain Pine Beetle ( <i>Dendroctonus ponderosae</i> )
2. Spruce Beetle ( <i>Dendroctonus rufipennis</i> )
3. Root Collar Weevil ( <i>Hylobius warreni</i> )
4. White-spotted Sawyer ( <i>Monochamus scutellatus</i> )
5. Asian Longhorned Beetle ( <i>Anoplophora glabripennis</i> )
6. Emerald Ash Borer ( <i>Agrilus planipennis</i> )
7. Forest Tent Caterpillar ( <i>Malacosoma disstria</i> )
8. Gypsy Moth ( <i>Lymantria dispar</i> )
9. Eastern Spruce Budworm ( <i>Choristoneura fumiferana</i> )
10. Aspen Serpentine Leafminer ( <i>Phyllocnistis populiella</i> )
11. Birch Leafminer ( <i>Fenusa pusilla</i> )
12. Canadian Tiger Swallowtail ( <i>Papilio canadensis</i> )
13. Giant Water Bug ( <i>Lethocerus americanus</i> )
14. Golden Northern Bumble Bee ( <i>Bombus fervidus</i> )
15. Boreal Bluet ( <i>Enallagma boreale</i> )

- **Lap Report:** Each report must be submitted by the date shown in the Laboratory Schedule.
- **Midterm Exam (Lecture):** Covers all topics presented in class through February 18 (Lecture period 10, which means that Spruce Budworms are NOT included for the midterm exam).
- **Midterm Exam (Lab):** Will take place at the beginning of the lab.
- **Final Exams:** Final exams for both lecture and lab will cover everything you learned in NRMT/BIOL 3217. Additional information will be provided in class.

### Letter Grades & GPA Criteria:

- Letter grades will be determined from final percentage marks according to the following table.

Descriptor	Percentage	Letter Grade	Grade Point Value
Excellent	94-100	A+	4.0
	88-93	A	4.0
	81-87	A-	3.7
Good	77-80	B+	3.3
	73-76	B	3.0
	70-72	B-	2.7
Satisfactory	67-69	C+	2.3
	63-66	C	2.0
	60-62	C-	1.7
Poor	55-59	D+	1.3
Minimum Pass	50-54	D	1.0
Failure	< 50	F	0.0

- Grades are assigned by taking the score for each course component and calculating a total course percentage score using component weights. A student's absolute score will be converted to a percentage (0-100), which will be used as the primary evaluation of performance and used to assign course grades.
- Final distributions of grades are not on the basis of a curve or historic distribution of student grades; rather, letter grades reflect a student's level of achievement of goals/outcomes in NRMT/BIOL 3217.

- An overall course mark of 50% or more usually guarantees a passing grade of at least D. However, a final mark of > 50% may receive an F if one of the two components (lab or lecture) was failed. An overall course mark of 94% or more guarantees a grade of A+. Grades are unofficial until approved by the Faculty offering the course.

### Notes and Expectations About Student Conduct:

- **Class and Laboratory Attendance:** Much of the material covered in class is not easily available elsewhere. Students are therefore encouraged to attend class regularly. There is a long-standing positive correlation between final mark and class attendance. The laboratory exercises are an essential part of the course material. Grades will undoubtedly reflect attendance and participation.
- **Disruptive Behaviour in Class:** Talking and other disruptive behaviour during lecture and lab presentations will not be tolerated. The rule in NRMT/BIOL 3217 is that disruptive students are given one warning and, upon a second offense, will be asked to leave the classroom. Disruptive behaviour prevents other students from making the most of their classroom opportunities. Please be courteous to your fellow students. Sleep if you like, but don't expect credit for it, stay in your seat (use a belt if necessary) and try not to snore. If you are awake, we will expect you to contribute to in class discussions from time to time.
- **Record Class Sessions:** Recording of lectures and/or labs is allowed ONLY with my prior written consent or as a part of an approved accommodation plan. Recorded materials and all other course materials are to be used solely for personal study, and are not to be distributed.
- **Cheating & Plagiarism:** We are required to remind all students about provisions for dealing with cheating, plagiarism and other ethical matters as defined by the *Student Code of Conduct*, which you may find at <https://www.lakeheadu.ca/students/student-life/student-conduct/academic-integrity/node/51239> along with other aspects of how the University deals with these issues. Please familiarize yourself with these expectations and understand that *actions as laid out by the code are not discretionary and must be taken with respect to any offense committed in the context of any formal course*. What constitutes 'cheating' and 'misrepresentation of facts' (= lying) should be clear to you. The concept of 'plagiarism' may be less clear for some students but this is regarded as a highly important matter in advanced scholarship. Simply put, plagiarism is to pass off somebody else's words, concepts or work as your own without giving proper citation or acknowledgement. If you have questions about what constitutes cheating or plagiarism, clear them up with the

instructor *before* engaging in the suspect behaviour. *Plagiarism and other forms of cheating will not be tolerated.*

- **Marking & Grading:** All work assigned in the course must be completed for a student to pass the course. If you do not complete all of the work required in the lab, or have an unexcused absence for either the midterm or final exam you will be given a grade of incomplete which will have to be cleared under standard University rules or converted to a grade of F. If you miss a lab or lecture exam you will also be given a mark of 0%, unless you have a valid reason. If one midterm is not written because of illness or campus-sanctioned absence, the marks will be transferred to the final exam. Unexplained absences from midterms will result in a grade of 0%. A student who cannot write a term examination or complete a term assignment due to incapacitating illness, severe domestic affliction or other compelling reasons can apply for extension of time to complete an assignment. A student who cannot write the final examination due to incapacitating illness, severe domestic affliction or other compelling reasons can apply for a deferred final examination. Such an application must be made to the student's Faculty office within 48 hours of the missed examination. Deferral of term work or exams is a privilege and not a right; there is no guarantee a deferral will be granted. Misrepresentation of facts to gain a deferral is a serious breach of the Code of Student Behaviour.