VANCOUVER ISLAND UNIVERSITY
SCIENCE & TECHNOLOGY
FORESTRY

FRST 352 – Forest Entomology
Course Outline

Term: Spring

Lecture/Lab: TBA

Instructor: TBA

Douglas-fir Tussock Moth

Source: TreeDoctor

COURSE INTRODUCTION
Insects are an integral component of forest ecosystems. The vast majority act in a beneficial or benign manner, however, a few can act as important pests. Insect population levels can vary from endemic with little impact upon forest (human) values to large-scale outbreaks with significant ecological, economic, or social consequences.

Students will be introduced to insects that may cause significant impact to the health of forests in B.C.

SCOPE AND CREDIT
This 3 credit course is accepted towards the

- Forestry Technology Diploma
- Bachelor of Science, Major in Biology
- Bachelor of Science in Fisheries & Aquaculture
- Bachelor of Natural Resource Protection
- Bachelor of Arts (optional science elective)

COURSE FORMAT (3:0:1)
Learning will be accomplished through a variety of activities, including attending lectures, in-class exercises, field trips, readings and assignments. (3:0:1)

TEXTS & REFERENCES

The following text is required for this course:

- Henigman, J. et al. 2001. *Field Guide to Forest Damage in BC*. Second edition. Joint Publ. No. 17. (available from department Technician)

The following text is recommended for this course:

- Edmonds, R. L., Agee, J. K. and Gara, R. L. 2000. *Forest Health and Protection*. McGraw-Hill. Boston. (Library reserve)

Mtn. Pine Beetle

Source: TreeDoctor

COURSE COMMUNICATIONS

All information regarding the course will be on "D2L" website:
http://learn.viu.ca

Check site often for updates.

W. Spruce Budworm

Source: TreeDoctor

LEARNING OUTCOMES

Upon successful completion of the course, the student will:

1. Define and use **technical terms** applicable to forest entomology in conversation with peers and in technical reports.

2. **Recognize the presence** of significant forest insect pest damage and, with the assistance of field guides and expert systems, diagnose the most probable causal agents.

3. Name and **rank the most significant** insect pests for the important conifers of British Columbia.

4. Describe the **role of insects** as components of **forest ecosystems** (i.e. agents that affect mortality, wood decomposition, species and structural diversity, succession and wildlife habitat).

5. Describe how insects might **impact forest management objectives** (e.g. biodiversity, recreation, aesthetics, wildlife habitat, water quality, timber).

6. Describe how **forest health surveys** are carried out by forest health specialists (e.g. annual overview surveys, ground walk-through, probes, and pheromone traps).

7. Describe how important forest insect pests develop over the **life of a stand**.

8. Describe **current and emerging** forest health problems.

9. Describe both long-term **preventative strategies** and short-term **control measures** aimed at minimizing the negative impacts of outbreaks for the major insect pests listed below:

    - **Bark Beetles**
    - **Defoliators**
    - **Terminal Weevils**
    - **Ambrosia Beetles**
    - **Plantation Pests**
    - **Adelgids**

Balsam Wooly Adelgid

Source: TreeDoctor

In addition to the <u>subject-specific</u> learning outcomes listed above, specific <u>program</u> learning outcomes will be covered. Upon successful completion of this course students will have furthered their ability to:

1. **Analyze** information and **think critically** (i.e. consider the life requirements of forest insects, their potential impact on management objectives, and determine viable treatment options).
2. Utilize **digital resources** to effectively search for information and solve problems (i.e. diagnose forest health problems and determine management options).
3. Work **collaboratively** with others - specifically to collaboratively write an article and create a "learning resource", all posted to a wiki.
4. **Learn independently** - specifically, for topics not covered in lectures, independently determine and utilize appropriate sources of information to answer questions posed in class

Spruce Terminal Weevil

Source: TreeDoctor

EVALUATION (sample)

15%	Wiki Articles
15%	Wiki Resource
15%	Quizzes
20%	Midterms (2@10%)
25%	Final Exam
10%	Professionalism

Quizzes will consist of short answer questions that will cover recent lecture material, reading assignments and/or identification of specimens.
Any missed exams or quizzes will receive a grade of zero.

Marks for "Professionalism" relate to behaviour and activities observed in class and online. Simply put, our workplace is a *learning environment*. A good mark is attained by positively contributing to the learning environment.

Further details regarding professionalism, as well as the grade scale breakout can be found on the Forestry Portal

Warren's Root Collar Weevil

Source: TreeDoctor

ACADEMIC POLICIES

For details regarding academic policies refer to the Forestry Portal.

TENTATIVE SCHEDULE – sample

Week of	Tuesday	Thursday
1	Course Intro Introduction to forest entomology	Basic anatomy & physiology of insects
2	Insect Classification & Adaptive Features	Reproductive potential vs. environmental/ host resistance
3	Film: *Hellstrom Chronicles*	Integrated Pest Management
4	Terminal Weevils - Biology	Terminal Weevils - Management
5	**Midterm 1**	Insect Parasitoids – **Tim Goater-Biology**
6	Bark Beetles - Biology	Bark Beetles - Management
7	Climate Change – **Jeff Lewis-Geography**	Bark Beetles – Impacts
8	**Study Days**	**Study Days**
9	Introduction to defoliators Decision (video)	Selected defoliators
10	Gypsy Moth	Seed & Cone Pests Sap Sucking (adelgids & aphids)
11	**Midterm 2**	**Field Trip - Forestry Canada, Victoria** **** Tentative date ******
12	Seedling pests: black army cutworm & root collar weevils & tip moths	Wood Destroying Insects
13	Ambrosia Beetle: *Tiny Beetles - Expensive Tastes*	Introduced/Exotic Pests
14	TBA	Summary/ Review
	Final exam date to be announced	