

FRST 235 – Forest Ecology II: Ecosystems and Management

Fall Course Outline

Location & Times: TBA

Instructor: TBA

Description

This course is a continued study of the application of ecological concepts and principles to forest resource management.

Topics include: natural disturbance, succession, ecosystem complexity and resilience, biological diversity, ecosystem functions and services, site productivity, biomass and energy, carbon and nutrient cycling, climate change, landscape ecology, environmental ethics and sustainability.

Prerequisites: FRST 131, FRST 132 (or similar first-year Biology and instructor permission).



Scope and Credit

Forest ecology is the study of forest ecosystems, including their structure and functions, and how these components interact and change over time. Forest ecology, silvics and ecosystem classification are the foundation for the practice of silviculture. An understanding of forest ecosystems helps us manage for the multiple objectives and values expected from public and private forest lands.

This course builds upon the basic overview of ecosystem components, processes and functions of ecosystems introduced in Forest Ecology I (FRST 132). Students will explore topics in forest ecology that are most relevant to forest management. Field labs will reinforce important concepts and help students develop practical skills. The course will also review some current ecological issues relevant to forest stewardship and sustainability.

This course is designed for students in the second year of the **Forest Resources Technology** program or the Forestry undergraduate transfer program. The VIU FRT program is accredited by the Canadian Technology Accreditation Board. **Credits: 3**

Course Format

There are three hours of lecture/lab each week, with about one-third field time overall; some field trips or labs may require scheduling a longer time period. (2:0:1)

Textbooks

Readings will supplement the lecture material. These readings may or may not be discussed in class but your understanding of the material will be assessed in quizzes and exams.

Required Texts:

(Available free online)

*Watts, S.B. and L. Tolland (Eds.). 2005. *Forestry Handbook for British Columbia*, 5th Edition, The Forestry Undergraduate Society, UBC Faculty of Forestry, 773 p.
<http://www.forestry.ubc.ca/publications/forestry-handbook/>

*Green, R.N. and K. Klinka. 1994. *A Field Guide to Site Identification and Interpretation for the Vancouver Forest Region*, BC Land Management Handbook No. 28, BC Ministry of Forests, 285 p.
<http://www.for.gov.bc.ca/hfd/pubs/docs/Lmh/Lmh25-2.htm>

Bunnell, F.L. and G.B. Dunsworth. 2009. *Forestry and Biodiversity*, UBC Press, 349 pp.
<http://site.ebrary.com/lib/viu/docDetail.action?docID=10378031>

* *Forestry students should have these texts from the prerequisite courses.*



Optional Text: (On reserve in the VIU library for 2 hour loan)

Kimmins, J.P. 2004. *Forest Ecology: A Foundation for Sustainable Forest Management and Environmental Ethics in Forestry*, 3rd Edition, Prentice-Hall, 611



Field Equipment and Safety

Some of the labs in this course are field exercises (outdoors). For labs or field trips involving walking off of roads or established trails, you are required to wear a hard hat, caulk boots and hi-visibility vest; have safety eyewear or have a wire mesh face shield on your hardhat; and carry an emergency whistle and personal first aid kit. Other field equipment will be supplied as needed.

Outdoor labs will be cancelled only when extreme weather compromises safety or the learning objectives (e.g., excessive wind or snowfall). You must be equipped with proper field gear and clothing for all types of weather and will not be permitted to participate in outdoor lab exercises without complete safety equipment.

Field Supplies

You must have a six-ring field pocket notebook with waterproof paper, and a mechanical pencil (or pencils and sharpener).



Learning Outcomes

Upon successful completion of the course, students will be able to:

1. Assess the potential hazards of working in the forest; demonstrate safe work procedures for carrying out tasks, and use appropriate personal protective equipment requirements and describe emergency procedures.
2. Define and use technical terms applicable to forest ecology in conversation with peers and in technical reports.
3. Describe why knowledge of forest ecosystems is essential for forest management.
4. Describe the importance of forests to global carbon, energy and nutrient cycles.
5. Explain the role of natural disturbances and succession in shaping forest attributes.
6. Compare the impacts of fire, wind, insects, disease and other disturbance agents on forest ecosystems.
7. Compare the stand ecological characteristics and processes that result from managed forests to natural disturbance regimes.
8. Identify important ecological processes operating at the landscape level.
9. Conduct vegetation and woody biomass surveys using standard field survey procedures.
10. Summarize and interpret ecological data.
11. Prepare a technical report from field notes and data.
12. Create a basic ecosystem map.
13. Summarize and critique a scientific research paper.
14. Discuss environmental issues and evaluate various viewpoints using ecological principles.
15. Explain the role of forest technologists in forest ecosystem stewardship, ethics and sustainable forest management.

In addition to the **subject-specific** learning outcomes listed above, specific **program** objectives will be covered.

Upon successful completion of this course students will have furthered their ability to:

1. Read and comprehend forest ecology material appropriate to resource management.
2. Analyze and interpret information and think critically in order to identify conclusions, implications and consequences.





Course Communications

All information regarding the course will be distributed through the course "D2L" website through VIU Learn at: <http://learn.viu.ca>

You will be automatically enrolled in the FRST235 website with your course registration. You are responsible for checking the website at least weekly for notices and assignments. If your email has changed since registration, make sure that you provide an up-to-date version.

Evaluation (sample)

Here is the breakdown of how your grade in the course will be determined (subject to minor adjustments):

Labs, Assignments	40%
Midterm Exam	20%
Quizzes	10%
Professionalism	10%
Final Exam	20%

Quizzes will cover recent lectures and any assigned reading material. Missed quizzes receive a mark of zero. There will be no surprise or "pop" quizzes. The dates for all quizzes and exams will be noted on the course website.

Grades will be calculated using the VIU standard grade scale (see D2L [Forestry Portal](#)).

Assignments

The format and other specifications for lab assignments will be provided in a written description. Occasionally, an update or correction is required. You are responsible for noting and following any changes described in class.

The date and time when lab reports are due will be given in the written description. Unless you have a valid excuse (e.g., illness), all work must be handed in when due in order to receive full marks (late: 5% deduction per day). No marks will be awarded for late assignments if marked work has already been returned to the rest of the class.

Academic Policies

For further information on exam policies, missing tests, assignment format standards, late assignments, instructor assessment and academic misconduct (e.g., plagiarism), please refer to the D2L [Forestry Portal](#).



Useful Websites

Here some useful sites covering several of the course topics:

1. BECWeb: Biogeoclimatic Ecosystem Classification, MFLNRO Research Branch.
<http://www.for.gov.bc.ca/hre/becweb/>
2. Ecological Society of America. Issues in Ecology series:
http://www.esa.org/esa/?page_id=1638
3. Forestry Library Research Guide:
<http://libguides.viu.ca/content.php?pid=155198>
4. Science & Technology Library Research Guides:
<http://libguides.viu.ca/cat.php?cid=9935>
5. Terrestrial Ecosystem Mapping (TEM), BC Min. Environment.
http://www.env.gov.bc.ca/fia/terreco_map.htm
6. Intergovernmental Panel on Climate Change <http://www.ipcc.ch/>

Course Schedule (sample)

Week	Lecture	Lab / Assignment **
1	<i>NO CLASS - FRST234 - Forest Eco. Assmt. & Mapping</i>	
2	Course introduction, review, fire ecology	A: Review ecological terms A: Research paper review
3	Forest landscapes, wildlife & biological diversity	A: Vegetation lab methods
4	<i>NO CLASS - FRST291 Fall Field Trip</i>	
5	Field Lab 1 - Veg. Plots	F: Vegetation plots A: Vegetation diversity indices
6	Terrestrial Ecosystem Maps (TEM): how and why	A: Lab 1 due C: TEM mapping, pre-typing
7	Field trip to MASS study (8:30am - 4:30pm)	A: Pre-reading on MASS study A: Research paper review due
8	<i>FRST231 - Silviculture (class time swap)</i>	F: Field Lab 2 - TEM mapping, field plots (teams, on your own)
9	Midterm Exam	F: Field Lab 2 - TEM mapping, field plots (cont. if needed)
10	Forest carbon, biomass and energy, nutrient cycling	A: Review Coarse Woody Debris (CWD) lab methods A: TEM data upload due
11	Holiday - Remembrance Day	A: Lab 2 - TEM Final map due
12	Field Lab 3 - CWD	F: CWD measurement A: Lab 3 - CWD field cards (due @ end of field lab)
13	Climate change and future forest management	A: Pre-reading - "Global Weirding" paper
14	<i>Last day of classes Study days, Exams</i>	<i>Date of FRST 235 Final Exam TBA</i>

**A=Assignment (homework), C=Classroom activity, F=Field lab