

## FRST 112 Forest Inventory

### Spring Course Outline

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**Location & Times:** TBA

**Instructors:** TBA

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#### Description

This course provides an introduction to tree and stand measurements for forest inventories, and coastal **log scaling and grading**. Topics include: tree measurements, forest sampling methods, appraisal cruising, pathological indicators and cruise compilation and mapping; log scaling includes log measurements, gross and net volume calculations and coastal statutory log grading.

#### Scope and Credit

This course is designed for students in the first year of the Forest Resources Technology Program.



Prerequisite: a passing grade in FRST 111 (or permission of the instructors). Reasonable proficiency with MS Excel (or similar spreadsheet software) is essential in order to complete assignments. **Credits: 3**

#### Course Format

This course will focus on basic log scaling and forest sampling techniques, principles and procedures with an emphasis on field applications. Concepts will be discussed in class and then put into practice so considerable time will be spent in the field; therefore, students should be physically fit and have the proper attire for late winter and early spring weather conditions. [3:0:3]

#### Textbooks and Supplies

##### Required textbooks:

- BC Min. Forests, Revenue Branch. 2005. *Cruising Manual*. <http://www.for.gov.bc.ca/hva/manuals/cruising>
- BC Min Forests, Revenue Branch. 2007. *Scaling Manual* (class set) <http://www.for.gov.bc.ca/hva/manuals/scaling>
- Iles, Kim. 2003. *A Sampler of Inventory Topics*, Kim Iles and Associated, First Edition, 2<sup>nd</sup> Printing by Friesens, Canada, 869 p. [loan from VIU Forestry]  
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/>

**Supplies:** You are required to have the following items:

- Calculator (Casio FX-260) or equivalent
- Six-ring field binder (preferably Duksbak No. 30) and waterproof notepaper (preferably "Field" or "Metric Cruiser")
- Felt-tip marker (wide, black, waterproof)
- Pencils: 2H and HB
- Compass with adjustable declination
- Biodegradable flagging tape (marking ribbon)
- Personal first aid kit

**Field Labs:** Personal protective equipment (caulk boots, hard hat, hi-viz vest, safety eyewear or wire mesh face shield, safety whistle), first aid kit and appropriate clothing (raingear and gloves, as needed) are required for outdoor labs. Students inadequately dressed or equipped may be dismissed from field sessions.

### 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 the technical terms applicable to forest inventory in conversation with peers and in technical reports;
3. Using a log scale stick, calculate the gross and net measurements and volumes of logs to BC government standards;
4. Classify logs into statutory grades through the proficient use of the VIU Log Grade Card.

5. Measure tree diameter, height and age using field instruments (to government standards);
6. Calculate gross and net tree volumes in cubic metres;
7. Record field observations and measurements in the form of clear, concise field notes with a professional appearance;
8. From field notes, compile and create timber cruise reports including stand and stock tables, gross and net stand volumes;
9. Demonstrate the operation, adjustment and maintenance of the field equipment and instruments used for log scaling and timber cruising (diameter tape, loggers tape, increment borer, clinometer, laser rangefinder);
10. Apply fixed area and variable plot sampling techniques, choose and justify appropriate use of these two sampling techniques;
11. Design, conduct a timber appraisal cruise, and compile a detailed report with estimated gross value, reliability statistics and a detailed map.

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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. Use math skills appropriate to the field of forestry, including: algebraic equations, calculations, geometry, precision, proportions and statistics;
2. Manage and use digital information effectively, including spreadsheets.



## 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 FRST112 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):

Scaling Assignments	10%
Scaling Exam	15%
Exam 1	20%
Cruise Assignments	10%
Cruise Project	15%
Exam 2	20%
Professionalism	10%

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. 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 References

Here some useful references covering several of the course topics:

- [Avery, T.E. and H. Burkhart. 2001. \*Forest Measurements\*, McGraw-Hill.](#)
- [Dunster, J. and K. 1996. \*Dictionary of Natural Resource Management\*, UBC Press.](#)
- [Bell, J. and Dilworth. 1993. \*Log Scaling and Timber Cruising\*, OSU Bookstores.](#)
- [Field Guide to Forest Damage in British Columbia.](#)
- [The Relascope Idea, \*Relative Measurements in Forestry\*, Walter Bitterlich. Commonwealth Agriculture Bureau](#)

These and other forest mensuration texts are available in the VIU Library.

## Course Schedule (sample)

Week	Mon AM	Tue PM	Fri AM
1	Course Introduction, safety	TBA	Log Scaling & Grading Overview; <u>gross</u> meas. and volumes
2	Log scaling gross meas. and volumes (cont.)	Scaling: <u>net</u> measurements and volumes	TBA
3	TBA	Basic tree measurements (height, diameter, age)	Lab 1 - Net Measures
4	Log grading	DLS exercise	Log grading
5	Lab 2 - Log Grading	DLS exercise	TBA
6	<b>NO CLASS</b> Family Day	<b>DLS - Lab 3</b>	<b>Written EXAM 1</b>
7	Intro to timber cruising Fixed area plots	<b>Field Lab: Fixed area plots</b>	Fixed plot compilation; tree volume, height: age curves
8	<b>NO CLASS</b> Study Days	<b>NO CLASS</b> Study Days	<b>NO CLASS</b> Study Days
9	Loss factors, gross & merchantable volume, stand & stock tables	Lab: Stand and stock tables	Introduction to variable plot sampling (Guest speaker: Dr. Kim Iles)
10	Variable plot sampling, relascopes, PRF, BAF	Variable plot sampling (continued) Lab: Paper cruise	Pathological indicators and quality remarks
11	Prism plots	<b>Field Lab: Prism plots</b>	Prism cruise statistics and sample design
12	Check cruise standards	Intro to Cruise Project, cruise compilation	<b>Field: Cruise Project</b>
13	TBA	<b>Field: Cruise Project</b>	<b>NO CLASS</b> <b>Good Friday</b>
14	<b>NO CLASS</b> <b>Easter Monday</b>	<b>Field: Cruise Project</b>	Cruise project compilation and mapping
	Last day of classes April Final Exam Days April <b>FRST 112 - EXAM 2 during finals; Cruise Project due</b>		