

I. COURSE DESCRIPTION:

This is a foundational course which introduces students to the techniques and instruments used in forest inventory field measurements. Background theory is reinforced with a great deal of outdoor practice in measuring tree diameters, heights and ages. The wedge prism will be introduced as a tool used in the measurement of forest density and techniques used in the inventory of coarse woody debris will be practiced. Acquired forest measurement skills in this course will have direct application in many other forestry courses.

II. LEARNING OUTCOMES AND ELEMENTS OF THE PERFORMANCE:

(Generic Skills Learning Outcomes placement on the course outline will be determined and communicated at a later date.)

Upon successful completion of this course the student will demonstrate the ability to:

1) Complete accurate, clear and legible field notes

Potential Elements of the Performance:

- fully complete area identification information headings on tally sheets and maps
- record inventoried trees by species and diameter class using a dot tally
- record all tally information clearly and completely

This learning outcome will constitute 15% of the course grade

2) Measure, classify and record tree diameters using accepted equipment and techniques.

Potential Elements of the Performance:

- explain the reasons for measuring tree diameters
- show the standard location (breast height) where diameter measurements are made on trees exhibiting different stem characteristics
- assign trees to different diameter classes given actual diameter measurements to 0.1 cm. Accuracy
- calculate basal area of trees given their diameters
- measure the diameters of trees to 95% accuracy using diameter tapes and parallel calipers

This learning outcome will constitute 20% of the course grade.

3) Measure and record tree heights

Potential Elements of the Performance:

- show and describe five different height measurements it is common to make on forest trees
- describe five methods of measuring tree height
- calculate tree heights from measurements using hypsometers equipped with different scales; degree, per cent, 15, 10
- measure tree heights to 95% accuracy using a Suunto clinometer
- measure tree height to 95 % accuracy using a height pole
- construct and use a staff hypsometer to measure tree height to 92.5 % accuracy

This learning outcome will represent 20% of the course mark.

4) Measure the age of trees and explain the importance of these measurements

- illustrate how a tree grows in height and age over a number of years
- distinguish between annual rings of conifers and 2 types of hardwoods
- determine the age of conifers to 95 % accuracy using an increment borer
- list and describe the applications of tree aging
- describe dendrochronology and explain its applications

This learning outcome will represent 15% of the course grade.

5) Measure the Basal Area of Individual Trees and Entire Forest Stands

- determine the basal area of a tree of a known diameter
- describe the importance of basal area/ hectare information
- show the principle of calculating basal area through the use of angle gauges
- list the types of equipment which can be used to measure basal area per hectare
- demonstrate proficiency in the use of a wedge prism
- determine the basal area of sample plots to 95% accuracy

This learning outcome will represent 15% of the course total

6) Inventory Coarse Woody Debris in Forest Ecosystems

Potential Elements of the Performance

- describe the characteristics of coarse woody debris in forests
- explain the value of coarse woody debris as a forest ecosystem component
- list and describe methods used to inventory coarse woody debris
- carry out an inventory of coarse woody debris in a forest setting.

This learning outcome will represent 10% of the course total.

7) Maintain and properly care for tree measurement equipment

- wind and unwind a 30 m and/or 50 m tape onto a spool
- carry height poles, hypsometers, increment borers, diameter tapes and other equipment in order to avoid equipment damage
- demonstrate how to sharpen and maintain an increment borer

This learning outcome will represent 5% of the course total. Up to 5% will be deducted for each documented mis-use or loss of equipment.

III. TOPICS:

- 1) Introduction to Forest Measurements
- 2) Completing field notes
 - using the dot tally system
 - completing area identification information
- 3) Measuring Tree diameter
 - reasons for measuring tree diameter
 - location where tree diameter is measured on trees exhibiting different stem characteristics and slope positions
 - how to measure tree diameter, tree diameter classes
 - concept of Basal Area introduced
 - measuring tree diameters with diameter tapes, callipers, 30 m. tapes

- 4) Measuring Tree Height
 - types of tree height measurements commonly obtained
 - methods of measuring tree height
 - calculating tree heights using readings obtained from a variety of clinometers
 - use of the Degree scale, % scale, 15 and 20 scales
 - calculating horizontal distances from slope distance information
 - measuring tree heights using Suunto, Haga, and staff hypsometers
 - an introduction to electronic clinometers
- 5) Tree Ages
 - how trees grow in height and age
 - identifying annual growth rings in different species classes of trees
 - tree aging techniques
 - measuring tree age using increment borers
 - care and use of increment borers and increment cores
 - applications of tree aging
 - dendrochronology
- 6) Measuring Coarse Woody Debris(CWD)
 - describing coarse woody debris in forest settings
 - ecological values of coarse woody debris
 - survey methods used to evaluate coarse woody debris
 - coarse woody debris survey procedures
- 7) Measuring Forest Density
 - measurement of forest basal area
 - uses of basal area information
 - theory of angle gauges
 - measuring basal area with a wedge prism
 - using your thumb as an angle gauge

IV. REQUIRED RESOURCES/TEXTS/MATERIALS:

Forest Mensuration Study Guide; 2010 edition
Compass with adjustable declination
Calculator

V. EVALUATION PROCESS/GRADING SYSTEM:

Tests (2)	50%
Assignments and quizzes	50%

There will be weekly field exercises and/or short written assignments. Field exercises include a tree height and diameter test which must be successfully completed to pass the course.

The following semester grades will be assigned to students:

<u>Grade</u>	<u>Definition</u>	<u>Grade Point Equivalent</u>
A+	90 – 100%	4.00
A	80 – 89%	3.00
B	70 - 79%	2.00
C	60 - 69%	1.00
D	50 – 59%	0.00
F (Fail)	49% and below	
CR (Credit)	Credit for diploma requirements has been awarded.	
S	Satisfactory achievement in field /clinical placement or non-graded subject area.	
U	Unsatisfactory achievement in field/clinical placement or non-graded subject area.	
X	A temporary grade limited to situations with extenuating circumstances giving a student additional time to complete the requirements for a course.	
NR	Grade not reported to Registrar's office.	
W	Student has withdrawn from the course without academic penalty.	

VI. SPECIAL NOTES:Course Outline Amendments:

The professor reserves the right to change the information contained in this course outline depending on the needs of the learner and the availability of resources.

Retention of Course Outlines:

It is the responsibility of the student to retain all course outlines for possible future use in acquiring advanced standing at other postsecondary institutions.

Prior Learning Assessment:

Students who wish to apply for advance credit transfer (advanced standing) should obtain an Application for Advance Credit from the program coordinator (or the course coordinator regarding a general education transfer request) or academic assistant. Students will be required to provide an unofficial transcript and course outline related to the course in question. Please refer to the Student Academic Calendar of Events for the deadline date by which application must be made for advance standing.

Credit for prior learning will also be given upon successful completion of a challenge exam or portfolio.

Substitute course information is available in the Registrar's office.

Disability Services:

If you are a student with a disability (e.g. physical limitations, visual impairments, hearing impairments, or learning disabilities), you are encouraged to discuss required accommodations with your professor and/or the Disability Services office. Visit Room E1101 or call Extension 2703 so that support services can be arranged for you.

Communication:

The College considers **WebCT/LMS** as the primary channel of communication for each course. Regularly checking this software platform is critical as it will keep you directly connected with faculty and current course information. Success in this course may be directly related to your willingness to take advantage of the **Learning Management System** communication tool.

Plagiarism:

Students should refer to the definition of “academic dishonesty” in *Student Code of Conduct*. A professor/instructor may assign a sanction as defined below, or make recommendations to the Academic Chair for disposition of the matter. The professor/instructor may (i) issue a verbal reprimand, (ii) make an assignment of a lower grade with explanation, (iii) require additional academic assignments and issue a lower grade upon completion to the maximum grade “C”, (iv) make an automatic assignment of a failing grade, (v) recommend to the Chair dismissal from the course with the assignment of a failing grade. In order to protect students from inadvertent plagiarism, to protect the copyright of the material referenced, and to credit the author of the material, it is the policy of the department to employ a documentation format for referencing source material.

Student Portal:

The Sault College portal allows you to view all your student information in one place. **mysaultcollege** gives you personalized access to online resources seven days a week from your home or school computer. Single log-in access allows you to see your personal and financial information, timetable, grades, records of achievement, unofficial transcript, and outstanding obligations, in addition to announcements, news, academic calendar of events, class cancellations, your learning management system (LMS), and much more. Go to <https://my.saultcollege.ca>.

Electronic Devices in the Classroom:

Students who wish to use electronic devices in the classroom will seek permission of the faculty member before proceeding to record instruction. With the exception of issues related to accommodations of disability, the decision to approve or refuse the request is the responsibility of the faculty member. Recorded classroom instruction will be used only for personal use and will not be used for any other purpose. Recorded classroom instruction will be destroyed at the end of the course. To ensure this, the student is required to return all copies of recorded material to the faculty member by the last day of class in the semester. Where the use of an electronic device has been approved, the student agrees that materials recorded are for his/her use only, are not for distribution, and are the sole property of the College.

Attendance:

Sault College is committed to student success. There is a direct correlation between academic performance and class attendance; therefore, for the benefit of all its constituents, all students are encouraged to attend all of their scheduled learning and evaluation sessions. This implies arriving on time and remaining for the duration of the scheduled session.

Field exercises will not be assigned other than at the scheduled class time.

Students missing field activities will receive a mark of 0 for that activity.

A final tree height and diameter test must be successfully completed to pass the course.

Late Assignments

There will be a 10%/day penalty for assignments received late (after 4:00 pm. on the due date)