COURSE OUTLINE: NRT147 - FOREST MEASUREMENTS

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Approved: Sherri Smith, Chair, Natural Environment, Business, Design and Culinary

Course Code: Title	NRT147: FOREST MEASUREMENTS
Program Number: Name	5220: NAT ENVIRONMENT TN 5230: FORESTRY TECHNICIAN
Department:	NATURAL RESOURCES PRG
Academic Year:	2023-2024
Course Description:	Forest measurement data supports inventory and management planning decisions. In this course, field visits to varying forested ecosites on and off campus are conducted where students gain practical experience in the use of industry specific forest mensuration tools. Emphasis is placed on safe, consistent, and accurate data collection methods. Tree and plot tallies will be recorded in hardcopy and digital formats. Basic forest industry concepts and terminology are introduced and studied. Students will have guided access to sites that include a wide variety of tree species in the Boreal Forest, and Great Lakes St. Lawrence Forest.
Total Credits:	3
Hours/Week:	3
Total Hours:	42
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course: **Please refer to program web page for a complete listing of program outcomes where applicable.**	**5220 - NAT ENVIRONMENT TN** VLO 1 Collect data from representative biological and environmental samples using routine test procedures. VLO 2 Utilize natural resources equipment and technology to accurately identify ecosystem components for purposes of conserving and managing natural resources. VLO 4 Conduct natural environment assessments according to standard field survey methods, including the use of appropriate equipment and materials. VLO 7 Work safely in adherence to occupational health and safety standards. VLO 8 Complete all work in compliance with applicable municipal, provincial and federal standards and guidelines. VLO 9 Contribute to the implementation of natural resource conservation and management. VLO 11 Communicate technical information accurately and effectively in oral, written and visual forms. **5230 - FORESTRY TECHNICIAN** VLO 1 Conduct forest inventory surveys and field measurements to determine forest resources and values in forests and woodlots. VLO 4 Collect, analyze, interpret, and display spatial data using mapping technology and Geographical Information Systems (GIS) to contribute to forest resource

		management.
	VLO 7	Select, operate, troubleshoot and maintain tools and equipment in a variety of environmental conditions and in accordance with safety and operating standards.
	VLO 8	Work independently and in a collaborative environment while applying effective teamwork, leadership and interpersonal skills.
	VLO 9	Communicate technical information to a variety of stakeholders in oral, written, visual and electronic forms.
	VLO 10	Develop strategies for ongoing professional development to enhance work performance in the forestry sector.
Essential Employability Skills (EES) addressed in this course:	EES 1	Communicate clearly, concisely and correctly in the written, spoken, and visual form that fulfills the purpose and meets the needs of the audience.
	EES 2	Respond to written, spoken, or visual messages in a manner that ensures effective communication.
	EES 3	Execute mathematical operations accurately.
	EES 4	Apply a systematic approach to solve problems.
	EES 5	Use a variety of thinking skills to anticipate and solve problems.
	EES 6	Locate, select, organize, and document information using appropriate technology and information systems.
	EES 7	Analyze, evaluate, and apply relevant information from a variety of sources.
	EES 8	Show respect for the diverse opinions, values, belief systems, and contributions of others.
	EES 9	Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.
	EES 10	Manage the use of time and other resources to complete projects.
	EES 11	Take responsibility for ones own actions, decisions, and consequences.
Course Evaluation:	Passing Grade: 50%, D A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.	
Other Course Evaluation & Assessment Requirements:	Academic success is directly related to consistent attendance. Being absent and missing more than 1/3 of the course hours in a semester shall result in an automatic F grade	

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
Collect and record accurate measurements in a variety of forested areas using industry specific tools and procedures.	1.1 Consistently record tree diameters to using a D-Tape. 1.2 Place trees into varying diameter classes using parallel calipers. 1.3 Use clinometer to accurately measure the height of trees. 1.4 Measure height and distance using a digital rangefinder. 1.5 Effectively sample and age a tree using an increment borer. 1.6 Identify differing end grain patterns when counting tree rings. 1.7 Use a BAF2 prism to carry out point sampling.
Course Outcome 2	**Learning Objectives for Course Outcome 2**

Understand and demonstrate a working knowledge of forestry terminology and methodology	2.1 Identify varying tree and forest components. 2.2 Differentiate between stem-density and stand-density. 2.3 Understand basal area and stocking metrics. 2.4 Identify varying forest condition types and their attributes.
Course Outcome 3	**Learning Objectives for Course Outcome 3**
Perform calculations and generate reports from data collected in a variety of forested conditions.	3.1 Perform basic statistics generated from data collected in field. 3.2 Calculate Basal area on a per tree and a per hectare basis. 3.3 Calculate Volume on a per tree and per hectare basis. 3.4 Use the % scale on a clinometer to calculate tree height.
Course Outcome 4	**Learning Objectives for Course Outcome 4**
Consistently navigate and traverse through a variety of forested conditions safely and accurately	4.1 Accurately compass along assigned azimuths for set distances. 4.2 Use a GPS unit to accurately track and mark waypoint positions. 4.3 Communicate with team to traverse safely and accurately.
Course Outcome 5	**Learning Objectives for Course Outcome 5**
Establish consistent and accurate forested plots for a variety of data collection methodologies	5.1 Calculate plot hypotenuse and/or plot radius given the plot area. 5.2 Effectively flag and mark plot components and tie in points. 5.3 Understand differing forestry sampling methods and their utility.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Field Assignments	30%
Field Tests	15%
Final Exam	25%
In-class Assignments	30%

Date: July 20, 2023

Addendum: Please refer to the course outline addendum on the Learning Management System for further information.