

DOC. #694

SAULT COLLEGE OF APPLIED ARTS AND TECHNOLOGY

SAULT STE. MARIE, ON

COURSE OUTLINE

COURSE TITLE: Resource Sampling

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CODE NO.: FOR223-3 SEMESTER: III

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PROGRAM: Forestry/Fish & Wildlife/Parks & Outdoor  
Recreation/Renewable Resources/  
Aboriginal Resource Technician

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AUTHOR: John Clement

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DATE: September 1995 PREVIOUS OUTLINE DATED: (new)

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APPROVED: \_\_\_\_\_

  
DEAN

  
DATE

Resource Sampling

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TOTAL CREDITS: 48

PREREQUISITE(S): Forest Mensuration strongly recommended  
Enrollment in statistics or a previous statistics  
course

I. PHILOSOPHY/GOALS:

To provide the student with the skills and abilities required to perform representative and reliable resource samples in the field in an accurate, precise, neat and professional manner.

II. STUDENT PERFORMANCE OBJECTIVES (OUTCOMES):

Upon successful completion of this course the student will be able to:

1. Define accurately the terms normally associated with natural resource sampling.
2. Keep neat and accurate field notes.
3. Collect field data for further analysis using the appropriate field equipment in an accurate and precise manner.
4. Set up a variety of natural resource sample surveys in an accurate and precise manner.
5. Design, use and appreciate equipment checklists for various natural resource surveys.
6. Relate sampling theory concepts to natural resource sampling surveys.
7. Calculate the descriptive statistics involved with resource sampling and sampling theory such as means, standard deviations, standard errors of the means, confidence limits, T tests, sample intensity and the number of samples required to achieve the desired confidence limit.
8. Appreciate the relationship between bias, accuracy, and precision and the impact of these in setting up representative resource samples.
9. Appreciate the effects of natural variation, sample intensity stratification, and economic considerations in the setting up of natural resource surveys.

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**II. STUDENT PERFORMANCE OBJECTIVES (OUTCOMES):** (continued)

10. Identify the impact of natural variation on sampling intensity and the number of samples required to get reliable data.
11. Outline the steps involved in natural resource sampling.
12. Specify the role of stratification in natural resource samples and show how stratification improves the reliability of the data.

**III. TOPICS TO BE COVERED:****Approximate Time  
Frames (Optional)**

1) Height and Diameter Review	Week 1
2) Forest Growth and Stem Analysis	Week 2
3) Browse Survey/Pellet Group Survey	Week 3
4) Strip Cruise	Week 4
5) Sampling Techniques	Week 5
6) Sampling Design	Week 6
7) Biotic Indices and Biodiversity Index Using Benthos Sampling Design	Week 7
8) Prism Cruise	Week 8
9) Parks Survey - Gallop Opinion Poll	Week 9
10) Forest Regeneration Assessments	Week 10
11) Sampling Theory	Weeks 11, 12, 13
12) OMNR Growth and Yield	Week 14
13) Intro to Hand Held Computer Applications	Week 15

**IV. LEARNING ACTIVITIES/REQUIRED RESOURCES****Topic/Unit 1: Height and Diameter Review**

**Learning Activities:** Students will measure dbh, total height and record species of 15 trees in the campus woodlot. Calculations will include stems/ha, basal area per hectare and volume per hectare.

**Resources:** Campus woodlot, hardhats, steel toed workboots, diameter tape, suunto clinometer, 30 meter tape.

**Topic/Unit 2: Forest Growth Assignment and Stem Analysis**

**Learning Activities:** Stem analysis of a section of a tree will yield information on Percentage Growth, Current Annual Increment, Periodic Annual Increment and Mean Annual Increment which will be plotted on a graph to show Optimum Rotation Age.

**Resources:** Students will be provided with a stem section but must supply their own metric scale ruler.

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IV. **LEARNING ACTIVITIES/REQUIRED RESOURCES** (continued)

**Note:** (3) Browse Survey/Pellet Count and (4) Strip Cruise are done at camp in regular program

**Topic/Unit 3: Browse Survey/Pellet Counts**

**Learning Activities:** Browse surveys and pellet group counts will be performed in a known deer yard to determine the local population.

Usually done at field school.

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**Topic/Unit 4: Strip Cruise**

**Learning Activities:** Using strip cruising principles, students will develop stand and stock tables from a strip cruise they will perform.

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**Topic/Unit 5: Sampling Techniques**

**Learning Activities:** The student will be introduced to various sampling techniques and the four stages of resource sample.

**Resources:** Maps and Aerial Photographs

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**Topic/Unit 6: Sampling Design**

**Learning Activities:** Students will be introduced to the planning components involved with natural resource sampling.

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**Topic/Unit 7: Biotic Indices and Biodiversity Index**

**Learning Activities:** Students will visit a stream and collect invertebrates in order to determine Biotic Indices and Biodiversity Index using a Benthos Sampling Design.

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**Topic/Unit 8: Prism Cruise**

**Learning Activities:** Students will use a prism in order to produce stand and stock tables.

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IV. **LEARNING ACTIVITIES/REQUIRED RESOURCES** (continued)

**Topic/Unit 9: Parks Survey (Gallop Opinion Poll)**

**Learning Activities:** Students will develop a 10 question survey questionnaire, poll 15 people about a specific parks issue, analyze the data and prepare a report based on this research.

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**Topic/Unit 10: Forest Regeneration Assessments**

**Learning Activities:** Students will be introduced to Quality Assessments, Survival Assessments, Stocking Assessments and Free to Grow. Students will also perform a survival assessment.

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**Topic/Unit 11: Sampling Theory**

**Learning Activities:** Students will be given numerous exercises and an assignment in calculating the descriptive statistics involved with resource sampling and sampling theory. Descriptive statistics include means, standard deviations, standard error of the mean, confidence limits, confidence intervals, T tests, sample intensities and the number of samples needed to achieve the desired precision level.

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**Topic/Unit 12: Growth & Yield (OMNR)**

**Learning Activities:** Students will be introduced to the survey design of the OMNR's Growth & Yield.

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**Topic/Unit 13: Introduction to Hand Held Microcomputers**

**Learning Activities:** Students will be introduced to ITAWCRUZ software on the DAP 1000 and the OMNR's Growth and Yield Program on the DAP 9000

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**V. EVALUATION METHODS:**

7 Assignments @ 10%	=	70%
Final Exam	=	30%
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		100%

Supplemental Exam minimum 50% eligibility

**VI. PRIOR LEARNING ASSESSMENT:**

Students who wish to apply for advanced credit in the course should consult the instructor.

**VII. SPECIAL NOTES**

Students with special needs (eg. physical limitations, visual impairments, hearing impairments, learning disabilities) are encouraged to discuss required accommodations confidentially with the instructor.

Your instructor reserves the right to modify the course as he/she deems necessary to meet the needs of students.

This course is at least 50% field work. Steel toed workboots and hardhats are required for all field trips.

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PROPOSED COURSE SYLLABUS

LECTURE

LAB

Introduction

\* A1 10% DBH/HT

Growth

A2 10% Growth Lab

Camp (Browse Survey)

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(Pellet Count)

Camp (Strip Cruise)

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Sampling Techniques

Lab Demo

Sampling Design

Sampling Techniques

Lab Demo

Biotic Survey/Biodiversity

\* A3 10% Field

Timber Cruise (Prism)

\* A4 10% Field (Woodlot)

Parks Survey

\* A5 10% Field

Survival Assessment

\* A6 10% Woodlot

Sampling Theory

A7 10% Lab Exercises

Sampling Theory

Lab Exercises

Sampling Theory

Lab Exercises

Growth & Yield

Hand Held Micro Computers

Review

Practise Exam

\* Field Work

Final Exam - 30% GOOD LUCK!

