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GRANDE PRAIRIE REGIONAL COLLEGE
DEPARTMENT OF SCIENCE AND TECHNOLOGY
Bachelor of Applied Forest Resource Management

Forest Mensuration II: FO4280

Pre-requisite: FO 2370 Forest Mensuration I

Calendar Description:

Measurement of timber and non-timber forest resources. Forest inventory methods. Sampling technique and design. Development and use of growth and yield models. Analytical methods in forest mensuration.

Instructor: Jennifer Hacking
Office: J221
Phone: 539-2873
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Lectures: Mondays/Wednesdays 8:30 – 9:50 a.m.

Texts:

Recommended:

Avery, T.E., and H.E. Burkhardt, 1994. **Forest Measurements**, 4th ed., McGraw-Hill.

References available in the library:

Avery, T.A. and H.E. Burkhardt. (1994). **Forest Measurements**. 4th Ed. McGraw-Hill, New York. 408 pp.

Husch, B., Miller, C.I. and T.W Beers. (1993). **Forest Mensuration**. Krieger Publishing Company, Malabar, Florida. 402 pp.

Cochran, W.G. (1977). **Sampling Techniques**. John Wiley & Sons, New York.

Compendium of Canadian Forestry Statistics. (1996). Canadian Council of Forest Ministers.

Freese, F. (1962). **Elementary Forest Sampling**. U.S. Dept. Agric. Handbook # 232.

Scientific Journals and Periodicals available in the library

Canadian Journal of Forest Research
Forestry Chronicle
Northern Journal of Applied Forestry
Silviculture

Website

www.canadian-forests.com
www.fs.fed.us

Course Outline

Forest mensuration is defined (Young and Giëse, 1990) as "the science dealing with the measurement of volume, growth and development of individual trees and stands and the determination of various products obtainable from them". The 'various products' refers to fibre products and also to other forest values such as recreation, wildlife.

The following topics will be covered in this course:

- Purpose of the inventory.
- Review of the concept of sampling and sampling terminology.
- Temporary versus permanent sample plots.
- Acceptable levels of error in collected data.
- Sample design:
 - Probability sampling
 - random sampling
 - stratified random sampling
 - multistage sampling
 - multiphase, including 'double' sampling
 - Non-random sampling
 - selective sampling
 - systematic sampling
- Estimation of required plot numbers and plot sizes.
 - Fixed area plots
 - Variable radius plots
- Precision and accuracy.
- Regression analysis.
- Multiple linear regression.
- Statistical implications of probability versus non-random sampling.
- Sampling with replacement versus sampling with no replacement.
- Point sampling versus fixed area sampling.

- Estimating growth and yield.
- Measures of density.
- Site quality.
- Sampling design stages.
- Examples of forest inventory design.

Traditionally, inventories of non-timber forest values have not received as much attention as inventories of fibre values. In part this was because they were not regarded as important and in part was probably also due to the difficulty of conducting an inventory and attaching actual monetary values to the results. We will consider the measurement of:

- rangeland resources
- fish and wildlife resources
- water resources and
- recreational resources

Course Evaluation:

Five assignments	35%
Design project	15%
Midterm exam	20%
Final exam	30%

Important dates:

Assignment #1 due	January 17
Assignment #2 due	January 31
Midterm exam	February 14
Assignment #3 due	March 7
Assignment #4 due	March 21
Assignment #5 due	April 4
Design project due	April 11
Final exam	TBA

Barring tragic circumstances, late assignments will not be accepted, marked, or included in the course mark.

Assignments will consist of questions drawn directly from readings and material covered in classes. The design project will be assigned at beginning of term and will require the student to apply course material to solve a specific inventory problem.