

2022/2023 Course Offerings Related to Forest Biometrics, Measurements, and Computation

This document provides an overview of the course offerings from the UBC Faculty of Forestry related to Forest Biometrics, Measurements, and Computation in 2022/2023 taught by Forest Biometrics faculty. We will update course offerings and their delivery methods on the UBC Forest Biometrics webpage (<https://biometrics.forestry.ubc.ca/2022-2023-courses/>) as changes occur.

New course: FRST 505 Application of Data Science in Forest Resources

Change: FRST 430 and FRST 533C are no longer cross-listed – graduate students are asked to register for FRST 533C

Undergraduate courses:

FRST 231	Introduction to Biometrics, Distance Education Version, required for students in BSF, BSc, BSCN, BSCW, and BEST programs, elective for BUF program, offered by Forestry and Land and Food Systems, Access Studies and natural resource programs at other universities – This course covers basic theories of probability and statistics, sampling distribution, methods of estimation and hypothesis testing, goodness of fit and tests for independence, analysis of variance, correlation and regression.	Instructor: Krivak-Tetley; 2022/23 Summer Delivery method: Distance Education Version (ONLINE) NOTE: This course is also offered as a non-distance education course. For details see the UBC course schedule .
FRST 232	Computer Applications in Forestry, required for students in BSF, BSc, elective for BSCN and BUF program – This course covers techniques involved in solving forestry data problems, preparing academic report using powerful tools, managing and formatting a wide range of data using R Markdown, Excel, VBA, GIS, Word processing and database management tools.	Instructor: Ahmed; 2022/23, W1, W2 Delivery method: Hybrid
FRST 239	Tree and Stand Measurements, required for BSF students, optional for other programs. Tree and plot measures, basic sampling designs, log scaling, tree volume and biomass measurements and models, and introduction to GIS and Remote sensing data for forest resources management.	Instructor: Salmon; 2022/23, W2 Delivery method: In-Person
FRST 339	Forest Level Measurements and Productivity, required for BSF students – This course provides background on the skills required for collecting and analysing data required for forest resources inventories, including sampling designs, fundamentals of model fitting, growth and yield, and GIS.	Instructor: TBA; 2022/23, W2 Delivery method: In-Person
FRST 430	Advanced Biometrics, W1, required for Forest Sciences UG students – This course provides an overview of theory and application of linear models for observational data and experimental designs.	Instructor: Eskelson 2022/23, W1 Delivery method: In-Person

Relevant undergraduate-level, growth and yield and silviculture courses:

FRST 305 Silviculture, W1 – Silviculture concepts and principles; stand dynamics; artificial and natural regeneration; cultural techniques for forest stand establishment and stand tending; silvicultural

systems; decision making and development of prescriptions; connections to forest planning.

Instructor: Montwe

FRST 436 Growth and Yield, W2 – Techniques of growth and yield projection and discussion of modelling approaches. Exploration of stand dynamics, quantitative implications of management treatments and environmental limitations to tree and stand growth. **Instructor: Barbeito**

Graduate courses:

FRST 505C	Directed Studies in Forest Science: Application in Data Science in Forest Resources – This course covers the application of Data Science methods in forestry and natural resources using Python. The emphasis is on exploring descriptive data analytic approaches and data wrangling applications for a big dataset to help select appropriate machine learning methodologies for predictive analysis.	Instructor: Ahmed 2022/23, W2 Delivery method: Hybrid
FRST 530	Advanced Modelling Methods for Natural Resources Applications – This course covers linear, nonlinear and generalized linear models, with mixed effects versions of each of these. Applications to forests and other natural environments are used as examples.	Instructor: Eskelson Next offered 2023/24, W1
FRST 531	Applied Multivariate Statistics – This course covers the application of a variety of multivariate methods using R for examples.	Instructor: Ahmed 2022/23, W2 Delivery method: Hybrid
FRST 533C	Problems in Statistical Methods: Advanced Biometrics – This course provides an overview of theory and application of linear models for observational data and experimental designs. In past years, this course was cross-listed with FRST 430. Starting this year, it will be taught as stand-alone 500-level course.	Instructor: Eskelson 2022/23, W1 Delivery method: In-Person
FRST 533C	Problems in Statistical Methods: Applied Spatial Statistics – This course covers an introduction to the theory of spatial statistics with applications to natural resources examples.	Instructor: Eskelson Next offered 2024/25, W2
FRST 556	Land Information Acquisition and Analysis, restricted to MFSM student – This course covers the principles and application of forest data acquisition and use.	Instructor: LeMay; 2022/23, W1 Delivery method: In-Person
GEM 530	Geospatial Data Analysis, restricted to MGEM students – This course covers the fundamentals of Python programming and scripting as it relates to geospatial data analysis and manipulation.	Instructor: Ahmed 2022/23, W1 Delivery method: In-Person
GEM 540	Linear Regression Models and Introduction to Spatial Statistics, W1&W2, restricted to MGEM students – This course provides an overview of theory and application of linear models for observational data (W1) and an introduction to spatial statistics (W2).	Instructor: Eskelson 2022/23, W1 & W2 Delivery method: In-Person

Other graduate-level, applied statistics courses across UBC campus:

BIOL 501.101 Quantitative Methods in Ecology and Evolution, W1 – This course covers quantitative methods for data analysis in ecology and evolution. The format is a mixture of lectures/discussions on methodological topics and practical workshops using the R package. **Instructor: Schluter (UBC Zoology)**

FISH 506H Statistics in Ecology and Marine Sciences, W1 -- Data in ecology and marine sciences are frequently associated with large challenges. Controlled experiments are often difficult and observational studies are often associated with missing data and measurement error. This class will introduce some of the challenges of using statistics to answer questions in ecology and marine sciences and the statistical tools developed to handle them. Topics covered in this class are: missing data, multiple imputation, censored and truncated data, GLMs, overdispersion, hidden Markov models, and state-space models. This course is a statistics class for graduate students in the Department of Statistics (STAT) and the Ocean and Fisheries Graduate program (OCF). This class is intended for students with good statistics background and some familiarity with R. The class is not recommended for students with little experience analysing data and those with limited R programming skills. **Instructor: Auger-Methe (UBC Statistics)**