

ER312A Hybrid Online/Field Course Outline

Introduction to the Course

ER312A is the first of two field courses offered in the RNS program. This course is delivered in a 6 week format with learning delivered online and two full days of in-person field work. You will work through each weekly unit online at your own pace and quizzes are due each week. There are a few live Zoom lectures that will be recorded for those who can't attend. The two field dates are noted in the course registration.

Course Goals

The purpose of the course is to teach you some basic methodologies commonly used in the field of ecological restoration, especially for terrestrial ecosystems.

By taking this course, you should be able to:

- understand the purpose for carrying out field surveys, site assessments, and inventories
- understand the value and use of maps and aerial photographs, and know how to access these information sources (including the applications of remote and near sensing)
- appreciate the importance of monitoring in restoration, and understand the application of photo-point monitoring as a technique
- understand the importance of a field notebook, and know how to prepare and maintain one
- develop a familiarity with local common flora and fauna in terrestrial, freshwater and marine ecosystems
- understand the collection of plant specimens, following the recognized protocol, and explain reasons for this protocol
- apply basic field surveying methods using compass, clinometer, measuring tapes and GPS units
- use basic sampling methods to describe understory and overstory vegetation
- understand the purpose and use of equipment commonly used for stream and lake surveys
- understand the procedures commonly used in a biophysical inventory of intertidal zones
- understand the preparation a technical document reporting on results of field work, according to recognized standards

Course Synopsis

This course consists of seven modules, which have been divided into a total of seventeen units. The following outline provides a brief synopsis of each module.

Unit 1 | Terms of Reference

In this first unit of the course we will establish some terms of reference, reviewing the "Ecological Restoration Guideline for BC". This is a course that introduces students to a broad suite of field methods, but before we move on to learning *what* and *how* to measure, we will explore the *why* of measurement. Topics include:

- Restoration – Terms of Reference

- Analog/Digital Maps and Mapping
- Tape and Pace (activity)
- GPS/GIS and remote sensing

Unit Two | Urban Watersheds

In this second unit of the course our focus will shift to urban watersheds and the domain of avian ecology. We'll learn about the role that patterns of historical development play in the impairment of urban watersheds and the deleterious impacts that these same patterns of development have had on bird populations. Topics include:

- Urban Watersheds
- Bird Point Counts
- Urban Avian Diversity – Urban Guilds
- Repeat Photo Monitoring
- Native Vegetation and Plant Collection

Unit Three | Characteristics of Successful Restoration Projects

In the third unit of this course we'll learn to identify characteristics common to successful restoration projects across different ecosystems, as well as barriers to restoration and the identification of degrading agents. Topics Include:

- Floristic Analysis and Sampling Plant Populations
- Garry Oak Ecosystems
- Restoration Monitoring

Unit Four | Ecosystem Inventories

In the fourth unit of this course, we dig deeper into ecosystem inventories, and learn about what they involve, and the integral role that they play in effective restoration work. We expand on the role that suitable monitoring regimes play in successful restoration projects, and how adopting the appropriate perspective is so important to carrying out *ecosystem-based* restoration. Topics include:

- Field Notes
- Coastal Douglas-fir Biogeoclimactic Zone
- Compass, Clinometer and Quadrats
- Overstory and Understory Characterization

Unit Five | Aquatic and Marine Environments

This week we shift our focus to aquatic and marine environments. But as we will learn, these systems are inherently linked to surrounding terrestrial systems. Through readings, video demos, and remote

site visits, we will learn about many concepts important to restoration of freshwater and marine ecosystems. Topics include:

- Streams and Limnology
- Swan Latke Restoration case study
- Rocky Intertidal – Interrupted Transect
- Eelgrass Restoration
- Saltmarsh Restoration

Unit 6 | Research, Data Collection and Writing Reports

Included in this unit are resources that should help us in researching and collecting relevant resources to include in our final assignments. Topics include:

- Writing reports
- Bioengineering
- Lightscape Assessment and Mapping
- Restoration Monitoring – Multispectral Imaging

Assignments

For this course there are five quizzes (one per week) and a final written assignment.