



# COURSE OUTLINE

## NRT140

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Prepared: Bob Knudsen    Approved: Sherri Smith

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| <b>Course Code: Title</b>   | NRT140: FOREST PLANT BIOLOGY   |
| <b>Program Number: Name</b>   | 5220: NAT ENVIRONMENT TN   |
| <b>Department:</b>  | NATURAL RESOURCES PRG  |
| <b>Semester/Term:</b>   | 18W  |
| <b>Course Description:</b>  | This course provides the student with a practical understanding of the classification, structure and functioning of plants in general with special consideration for woody plants. The concepts presented in this course will have direct application in a number of courses in the Forestry Technician Program.   |
| <b>Total Credits:</b>   | 3  |
| <b>Hours/Week:</b>  | 3  |
| <b>Total Hours:</b>   | 45   |
| <b>Vocational Learning Outcomes (VLO's):</b><br><br>Please refer to program web page for a complete listing of program outcomes where applicable. | <ul style="list-style-type: none"><li>#1. Collect data from representative biological and environmental samples using routine test procedures.</li><li>#2. Utilize natural resources equipment and technology to accurately identify ecosystem components for purposes of conserving and managing natural resources.</li><li>#3. Apply the basic concepts of science to natural resource conservation and management.</li><li>#4. Conduct natural environment assessments according to standard field survey methods, including the use of appropriate equipment and materials.</li><li>#5. Recommend eco-site conservation and management strategies through the classification of ecosystem components.</li><li>#6. Practice principles and ethics associated with natural resource conservation and management issues.</li><li>#7. Work safely in adherence to occupational health and safety standards.</li><li>#8. Complete all work in compliance with applicable municipal, provincial and federal standards and guidelines.</li><li>#9. Contribute to the implementation of natural resource conservation and management.</li><li>#10. Perform basic project management support techniques.</li><li>#11. Communicate technical information accurately and effectively in oral, written and visual forms.</li><li>#12. Travel accurately in a timely manner in the outdoors using appropriate navigation aids and motorized transport equipment.</li><li>#13. Apply awareness of global environmental issues to conservation and management of natural resources.</li></ul> |



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### Essential Employability Skills (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.
- #2. Respond to written, spoken, or visual messages in a manner that ensures effective communication.
- #3. Execute mathematical operations accurately.
- #4. Apply a systematic approach to solve problems.
- #5. Use a variety of thinking skills to anticipate and solve problems.
- #6. Locate, select, organize, and document information using appropriate technology and information systems.
- #7. Analyze, evaluate, and apply relevant information from a variety of sources.
- #8. Show respect for the diverse opinions, values, belief systems, and contributions of others.
- #9. Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.
- #10. Manage the use of time and other resources to complete projects.
- #11. Take responsibility for ones own actions, decisions, and consequences.

### Course Evaluation:

Passing Grade: 50%, D

### Evaluation Process and Grading System:

| Evaluation Type | Evaluation Weight |
|-----------------|-------------------|
| Lab Assignments | 60%               |
| Tests/Exams     | 40%               |

### Books and Required Resources:

Introductory Plant Biology by K.A. Stern  
Publisher: Wm. C. Brown Publishers

### Course Outcomes and Learning Objectives:

#### Course Outcome 1.

1. Describe what a species is and how all species relate in their evolutionary history.

#### Learning Objectives 1.

- Apply the classification. List various characteristics used to practically distinguish different species.
- Describe and use the binomial system of classification.
- Explain phylogeny and system.



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### Course Outcome 2.

2. Describe the structure and functioning of a plant cell.

### Learning Objectives 2.

- List and describe the function and interactions of the following cell components: cell wall, cell membrane, nucleus, nucleolus, chloroplast, mitochondria, ribosomes, golgi apparatus, vacuoles and endoplasmic reticulum.
- Describe the structural roles of carbohydrates, lipids, amino acids and nucleic acids in cells.

### Course Outcome 3.

3. Describe the anatomy, function and inter-relationships of specified structures of a plant.

### Learning Objectives 3.

- Describe cells and tissues of leaves, stems, and roots.
- Distinguish by anatomical features between flowering plants and gymnosperms and between monocots and dicots.
- Recognize cells and tissues of leaves, stems and roots from microscopic slides.

### Course Outcome 4.

4. Metabolic processes.

### Learning Objectives 4.

- Describe the processes involved in photosynthesis.
- Describe the processes involved in respiration.
- Describe the processes involved in transpiration.
- Describe the processes involved in water, soils and nutrient uptake.

### Course Outcome 5.



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5. Describe plant growth process.

### Learning Objectives 5.

- Describe the various meristematic regions in plant including vascular cambium, cork cambium and apical meristems.
- Describe the roles of auxins and giberellins in plant growth.
- Distinguish between primary and secondary growth.
- Describe the process of annual growth in woody plants.

### Course Outcome 6.

6. Describe reproductive processes in plants.

### Learning Objectives 6.

- Differentiate between sexual and asexual reproduction.
- List and give examples of 6 different vegetative methods of reproduction.
- Distinguish between haploid and diploid conditions, gametophyte and sporophyte generations, spores and seeds.

### Course Outcome 7.

7. Describe life cycles of various plant groups.

### Learning Objectives 7.

- Distinguish between different stages in the life cycles of ferns, mosses, club mosses, conifers and flowering plants.
- Draw from microscope slides specified life stages.

**Date:**

Thursday, August 31, 2017

Please refer to the course outline addendum on the Learning Management System for further



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