



COURSE OUTLINE: NRT140 - FOREST PLANT BIOLOGY

Prepared: Lynn Goulding

Approved: Sherri Smith, Chair, Natural Environment, Business, Design and Culinary

Course Code: Title	NRT140: FOREST PLANT BIOLOGY
Program Number: Name	5230: FORESTRY TECHNICIAN
Department:	NATURAL RESOURCES PRG
Academic Year:	2023-2024
Course Description:	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.
Total Credits:	3
Hours/Week:	3
Total Hours:	42
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Vocational Learning Outcomes (VLO's) addressed in this course:	5230 - FORESTRY TECHNICIAN
Please refer to program web page for a complete listing of program outcomes where applicable.	VLO 5 Contribute to sustainable forest management plans, including conservation and rehabilitation measures, taking into consideration the perspectives of a variety of stakeholders and the requirements of relevant legislation and regulations.
	VLO 6 Identify and analyze forest diseases, pests, invasive species and other disturbance events and implement mitigation strategies to maintain and improve forest ecosystems.
Essential Employability Skills (EES) addressed in this course:	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.
	EES 2 Respond to written, spoken, or visual messages in a manner that ensures effective communication.
	EES 3 Execute mathematical operations accurately.
	EES 4 Apply a systematic approach to solve problems.
	EES 5 Use a variety of thinking skills to anticipate and solve problems.
	EES 6 Locate, select, organize, and document information using appropriate technology and information systems.
	EES 7 Analyze, evaluate, and apply relevant information from a variety of sources.
	EES 8 Show respect for the diverse opinions, values, belief systems, and contributions of others.
	EES 9 Interact with others in groups or teams that contribute to effective working relationships and the achievement of goals.
	EES 10 Manage the use of time and other resources to complete projects.



	EES 11 Take responsibility for ones own actions, decisions, and consequences.																								
General Education Themes:	Science and Technology																								
Course Evaluation:	<p>Passing Grade: 50%, D</p> <p>A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.</p>																								
Other Course Evaluation & Assessment Requirements:	Academic success is directly linked to attendance. Missing more than 1/3 of the course hours in a semester shall result in a F Grade for this Course.																								
Course Outcomes and Learning Objectives:	<table border="1"> <thead> <tr> <th>Course Outcome 1</th> <th>Learning Objectives for Course Outcome 1</th> </tr> </thead> <tbody> <tr> <td>Describe what a species is and how all species relate in their evolutionary history.</td> <td> 1.1 Apply the classification. List various characteristics used to practically distinguish different species. 1.2 Describe and use the binomial system of classification. 1.3 Explain phylogeny and system. </td> </tr> <tr> <th>Course Outcome 2</th> <th>Learning Objectives for Course Outcome 2</th> </tr> <tr> <td>Describe the structure and functioning of a plant cell.</td> <td> 2.1 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. 2.2 Describe the structural roles of carbohydrates, lipids, amino acids and nucleic acids in cells. </td> </tr> <tr> <th>Course Outcome 3</th> <th>Learning Objectives for Course Outcome 3</th> </tr> <tr> <td>Describe the anatomy, function and inter-relationships of specified structures of a plant.</td> <td> 3.1 Describe cells and tissues of leaves, stems, and roots. 3.2 Distinguish by anatomical features between flowering plants and gymnosperms and between monocots and dicots. 3.3 Recognize cells and tissues of leaves, stems and roots from microscopic slides. </td> </tr> <tr> <th>Course Outcome 4</th> <th>Learning Objectives for Course Outcome 4</th> </tr> <tr> <td>Relate plant metabolic processes to environmental conditions.</td> <td> 4.1 Describe the processes involved in photosynthesis. 4.2 Describe the processes involved in respiration 4.3 Describe the processes involved in transpiration. 4.4 Describe the processes involved in water, soils and nutrient uptake. </td> </tr> <tr> <th>Course Outcome 5</th> <th>Learning Objectives for Course Outcome 5</th> </tr> <tr> <td>Describe plant growth process.</td> <td> 5.1 Describe the various meristematic regions in plants including vascular cambium, cork cambium and apical meristems. 5.2 Describe the roles of auxins and giberellins in plant growth. 5.3 Distinguish between primary and secondary growth. 5.4 Describe the process of annual growth in woody plants. </td> </tr> <tr> <th>Course Outcome 6</th> <th>Learning Objectives for Course Outcome 6</th> </tr> <tr> <td>Describe reproductive processes in plants.</td> <td> 6.1 Differentiate between sexual and asexual reproduction. 6.2 List and give examples of 6 different vegetative methods of reproduction. </td> </tr> </tbody> </table>	Course Outcome 1	Learning Objectives for Course Outcome 1	Describe what a species is and how all species relate in their evolutionary history.	1.1 Apply the classification. List various characteristics used to practically distinguish different species. 1.2 Describe and use the binomial system of classification. 1.3 Explain phylogeny and system.	Course Outcome 2	Learning Objectives for Course Outcome 2	Describe the structure and functioning of a plant cell.	2.1 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. 2.2 Describe the structural roles of carbohydrates, lipids, amino acids and nucleic acids in cells.	Course Outcome 3	Learning Objectives for Course Outcome 3	Describe the anatomy, function and inter-relationships of specified structures of a plant.	3.1 Describe cells and tissues of leaves, stems, and roots. 3.2 Distinguish by anatomical features between flowering plants and gymnosperms and between monocots and dicots. 3.3 Recognize cells and tissues of leaves, stems and roots from microscopic slides.	Course Outcome 4	Learning Objectives for Course Outcome 4	Relate plant metabolic processes to environmental conditions.	4.1 Describe the processes involved in photosynthesis. 4.2 Describe the processes involved in respiration 4.3 Describe the processes involved in transpiration. 4.4 Describe the processes involved in water, soils and nutrient uptake.	Course Outcome 5	Learning Objectives for Course Outcome 5	Describe plant growth process.	5.1 Describe the various meristematic regions in plants including vascular cambium, cork cambium and apical meristems. 5.2 Describe the roles of auxins and giberellins in plant growth. 5.3 Distinguish between primary and secondary growth. 5.4 Describe the process of annual growth in woody plants.	Course Outcome 6	Learning Objectives for Course Outcome 6	Describe reproductive processes in plants.	6.1 Differentiate between sexual and asexual reproduction. 6.2 List and give examples of 6 different vegetative methods of reproduction.
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	6.3 Distinguish between haploid and diploid conditions, gametophyte and sporophyte generations, spores and seeds.
Course Outcome 7	Learning Objectives for Course Outcome 7
Understand the life cycles of various plant groups.	7.1 Distinguish between different stages in the life cycles of ferns, mosses, club mosses, conifers and flowering plants. 7.2 Draw from microscope slides specified life stages.
Evaluation Process and Grading System:	Evaluation Type
	Evaluation Weight
	Lab Assignments 60%
	Tests/Exams 40%
Date:	July 20, 2023
Addendum:	Please refer to the course outline addendum on the Learning Management System for further information.