

Grande Prairie Regional College
Department of Science & Technology
Course Outline
Winter 1998

Course: *Plant Physiology* (BT 2400)
Instructor: Dr. Weixing Tan
Office: J210
Phone: 539-2793

Prerequisites: BI 1080
Corequisite: CH 1610

Course Description:

This course studies how plants grow, develop and respond to environmental influences and cultural treatments using trees as primary examples. Although the scope ranges from biochemical, cellular, tissue to whole plant level, emphasis is placed on the whole plant level. Major topics include: water relations (cell water relations, water absorption, movement, transpiration, and water balance), photosynthesis, respiration, nutrition, vegetative and reproductive growth, plant hormones, and stress physiology. Applications in forest resource management are emphasized.

Textbook: Kozłowski TT and Pallardy SG. 1997. **Physiology of Woody Plants**. 2nd Edition. Academic Press, New York.

References: Salisbury FB and Ross CW. 1992. **Plant Physiology**. 4th Edition. Wadsworth Publisher, Belmont, California.

Kozłowski TT and Kramer PJ. 1991. **The Physiological Ecology of Woody Plants**. Academic Press, New York.

Evaluation:	Lecture/Lab Quizzes	15%
	Lab Reports	30%
	Midterm Exam	20%
	Final Exam	35%
		<hr/> 100%

Requirements: Regular attendance to lectures and participation in classroom discussion are highly recommended since missing classes can be hazardous to your grades.

Subject (in sequence)		Chapter	
		Kozłowski & Pallardy (1997)	Sulisbury & Ross (1992)
Introduction	Role of physiology in forestry	1	
	Cell water relations	11	2 & 3
Water Relations	Absorption	11	5
	Movement	11	5
	Transpiration and balance	12	4
	Photosynthesis	5	10, 11 & 12
Energy & Carbon	Respiration	6	13
	Translocation & storage	Part of 7	8
	Requirements	9, 10	6
Nutrition	Absorption	9	7
	Function	9, 10	6
Growth, development & regulation	Vegetative Growth	3	16
	Reproductive Growth	4	16
	Hormones	13	17 & 18
	Drought & nutrient	part of 13 & 10	26
Introduction to Stress Physiology (or Ecophysiology)	Temperature	part of 5 & 12	22 & 26
(Kozłowski, Kramer & Pallardy, 1991)	Soil compaction & flooding		
	Air pollution		

Grande Prairie Regional College
Department of Science & Technology
Laboratory Schedule Winter 1998

Course: *Plant Physiology* (BT 2400)
Instructor: Dr. Weixing Tan
Assistant: Rick Scott

WK	DATE	LAB #	DESCRIPTION
1	13/01	1	Introduction
2	20/01	2	Cell and Tissue Water Relations
3	27/01	3	(1) Transpiration and Effects of Drought and Light (2) Xylem Tension with Pressure Chamber
4	03/02	4	Mineral Nutrition -- Starting
5	10/02	5	(1) Photosynthesis -- Video Show and Discussion
		4	(2) Initiation of Nutrient Treatment
6	17/02		Midterm Exam
7	24/02		Winter break
8	03/03	6	Effects of Light Intensity on Photosynthesis using Infra-Red Gas Analyser (IRGA)
9	10/03	7	Growth Rate and Photosynthetic Efficiency and Capacity in Willows
10	17/03	8	Hormones and Plant Root Growth and Leaf Senescence
11	24/03	4	Mineral Nutrition -- Final Harvesting
12	31/03	4	Data Analysis
13	07/04		Open Session

The detailed lab instruction will be distributed before each lab.

Requirements: Presence at each laboratory for this course is *compulsory*. A passing grade in the lab is required to pass the course. A medical note from your Doctor is required for all excused absence(s). Mark will be deducted on the overdue lab report(s) at a rate of 10% per day.

Each student is expected to supply the following at each lab: **calculator**, pencils, eraser, lab coat, some paper, and binder to hold data sheets.