

Grande Prairie Regional College
 Department of Science & Technology
 Bachelor of Applied Forest Resource Management
Course Outline
 Winter 1999

Course:	<i>Plant Physiology</i> (BT 2400)	
Classroom:	E311	
Instructor:	Dr. Weixing Tan	
Office:	E307	
Phone:	539-2793	
E-mail:	weixing.tan@gprc.ab.ca	
Lab Assistant:	Rick Scott	
Prerequisites:	BI 1080	
Co-requisite:	CH 1610	
Transfer Status:	BT 240 at U of A, Sr. BOTA at U of C, BIOL 3xx at Athabasca University, and BIO 2xx at Augustana University College	
Time of Lectures:	Tuesday and Thursday	13:30 - 14:50
Time of Lab:	Tuesday	15:00 - 18:00

Calender 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: vegetative and reproductive growth, photosynthesis, respiration, nutrition, water relations (cell water relations, water absorption, movement, transpiration, and water balance), plant hormones, and stress physiology. Applications in forest resource management are emphasized.

Textbook

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

Major References

- 1) Salisbury FB and Ross CW. 1992. **Plant Physiology**. 4th Edition. Wadsworth Publisher, Belmont, California.
- 2) Kozlowski TT and Kramer PJ. 1991. **The Physiological Ecology of Woody Plants**. Academic Press, New York.

Scientific Journals and Periodicals (available in the Library)

Canadian Journal of Botany

Annual Review of Plant Physiology and Plant Molecular Biology

Canadian Journal of Forest Research

Course Content

Subject (in sequence)		Chapter	
		Required Readings	Suggested Readings
		Kozlowski & Pallardy (1997)	Salisbury & Ross (1992)
Introduction	Role of physiology in forestry	1	
	Photosynthesis	5	10, 11 & 12
Energy & Carbon	Respiration	6	13
	Translocation & storage	Part of 7	8
	Cell water relations	11	2 & 3
Water Relations	Absorption	11	5
	Movement	11	5
	Transpiration and water balance	12	4
	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 stress	part of 13 & 10	26
Introduction to Stress Physiology (or Ecophysiology)	Temperature stress	part of 5 & 12	22 & 26
(Kozlowski, Kramer & Pallardy, 1991)	Soil compaction & flooding stress		
	Air pollution stress		

Requirements

Regular attendance to the lectures and participation in classroom discussion are highly recommended. 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(s) is required for all excused absences. Mark will be deducted on the overdue lab report(s) at a rate of 10% per day.

Laboratory Schedule

WK	DATE	LAB #	DESCRIPTION
1	12/01	1	Introduction
2	19/01	2	Mineral Nutrition -- Starting
3	26/01	3 2	(1) Photosynthesis -- Video Show and Discussion (2) Initiation of Nutrient Treatment
4	02/02	4	Effects of Light Intensity on Photosynthesis using Infra-Red Gas Analyser (IRGA)
5	09/02	5	Growth Rate and Photosynthetic Efficiency and Capacity in Willows
6	16/02		Midterm Exam
7	23/02		Winter break
8	02/03	6	Cell and Tissue Water Relations
9	09/03	7	(1) Transpiration and Effects of Drought and Light (2) Xylem Tension with Pressure Chamber
10	16/03	2	Mineral Nutrition -- Final Harvesting
11	23/03	2	Data Analysis
12	30/03	8	Hormones and Plant Root Growth and Leaf Senescence
13	06/04		Open Session

The detailed lab instruction will be distributed before each lab. Each student is expected to supply the following at each lab: **calculator**, pencils, eraser, some paper, and binder to hold data sheets.

Evaluation

Quizzes/Assignments	15%
Lab Reports	30%
Midterm Exam	20%
Final Exam	35%
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	100%