W-03

Grande Prairie Regional College

Department of Science and Technology

Bachelor of Applied Forest Resource Management

Plant Physiology: BT2400

Pre-requisite: BI1080
Co-requisite: CH1610

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

Lecture Instructor: Jennifer Hacking
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Telephone: 539-2873
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Lectures: Tuesdays & Thursdays 8:30 – 9:50 a.m.
B207

Lab Instructor: Rick Scott
Office: J121
Telephone: 539-2953
E-mail: rscott@gprc.ab.ca

Required Text:

Hopkins, William G. 1999. **Introduction to Plant Physiology, 2nd Edition.** John Wiley & Sons, New York, N.Y.

Other References (in library)

Kozlowski, T.T. and S.G. Pallardy. 1997. **Physiology of Woody Plants, 2nd Edition.** Academic Press, New York, N.Y.
Salisbury, F.B. and C.W. Ross. 1992. **Plant Physiology, 4th Edition.** Wadsworth Publishers, Belmont, CA.
Kozlowski, T.T. and P.J. Kramer. 1991. **The Physiological Ecology of Woody Plants.** Academic Press, New York, N.Y.

Journals and Periodicals

Canadian Journal of Botany (on-line at www.nrc.ca)
Annual Review of Plant Physiology and Plant Molecular Biology
Canadian Journal of Forest Research (on-line at www.nrc.ca)

Course Evaluation:

Lab midterms and reports	35%	(further explained in lab outline)
Midterm exam	20%	
Assignments	15%	
Final exam	30%	

N.B. A passing grade in the lab component of the course is required to pass the course.

Lecture Schedule

Subject		Week	Hopkins	Notes
Introduction	Plant Cell	1	1	
	Cells & Tissues			
	Plant Organs			
Plant Cells & Water	Properties of Water	2	2	
	Translocation			
	Water Potential			
Water Relations	Transpiration	3	3	Assignment 1 Given 21 Jan
	Conduction			
	Absorption			
Inorganic Nutrients	Essential nutrients	4	4	Assignment 1 Due 28 Jan
	Deficiency symptoms			
	Toxicity			
Nutrient uptake	Transport	5	5	Assignment 2 Given 4 Feb
	Uptake by roots			
	Roots & microbes			
Energy & carbon	Nature of light	6	7	Assignment 2 Due 11 Feb
	Leaves & photosynthesis		8	
	Bioenergectics		9	
	Carbon metabolism	7	10	**Midterm – 18 Feb**
	Translocation		11	
	Cellular respiration	8	12	
	Carbon assimilation		13	
Plant Development	Control of growth & development	9	15	Assignment 3 Given 11 Mar
	Vegetative & reproductive growth			
	Plant hormones	10	16	Assignment 3 Due 18 Mar
Plant responses	Light	11	18	
	Plant movement		19	
	Photoperiodism	12	20	Assignment 4 Given 1 April
	Temperature		21	
Stress physiology	Water stress	13	22	Assignment 4 Due 8 April
	Temperature stress			
	Insects & disease			
	Pollutants			