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

Course:	*Forest Ecology* (FO 2020) 3(3-0-3)	
Classroom:	B307	
Instructor:	Weixing Tan, PhD	
Office:	E307	
Phone:	539-2793	
E-mail:	weixing.tan@gprc.ab.ca	
Prerequisites:	BI 2080, BT2400, FO1220	
Transfer Status:	Athabasca University BIOL 2xx; Augustana University College BIO 2xx	
Time of Lectures:	Monday and Wednesday	11:30 - 12:50
Time of Lab:	Wednesday	14:30 - 17:30

Calender Description

The course examines the structure and function of forest ecosystems. Different levels of organization. Energy flow and productivity . Nutrient cycling within and between systems. Genetic aspects of ecosystems. Concept of succession and special role of fire. Autecology of important species.

Textbook

Kimmins JP. 1996. **Forest Ecology**. Prentice Hall, Upper Saddle River, New Jersey.

Major References

1) Barnes BV et al. 1998. **Forest Ecology.** 4th Edition. John Wiley and Sons.
2) Terry D. 1994. **Forest Ecosystems**. University of John Hopkins Press.
3) Waring RH and Schlesinger WH. 1985. **Forest Ecosystems: Concepts and Management**. Academic Press, Florida.

Scientific Journals and Periodicals (available in the Library)

Canadian Journal of Forest Research
Forestry Chronicle
Northern Journal of Applied Forestry
Canadian Journal of Botany

Useful Web Sites

www.metla.fi; www.canadian-forests.com; www.fs.fed.us; www.forestnet.com; www.foresters.org; www.forestindustry.com.

Course Content

Forest Ecology (FO 2020) examines the structure and function of forest ecosystems. Since the course has strong links with Forest Ecosystem Management (FO 3670) and leads directly into Silviculture (FO 3130 and FO 3050), the practical applications and implications of forest ecology in ecosystem management are emphasized. The following lists the major topics to be addressed in this course and the required or suggested readings in two major books:

Topic	Readings (chapters)	
	Kimmins, 1996 (required)	Barnes et al. 1998 (suggested)
Definition and development of forest ecology	1 and 2	1
The role of forest ecology in forestry	1 & 2	1
The concept of forest ecosystem	3	2 & 3
Production Ecology (energy flow) and Forest Productivity – Concept of food webs, GPP, NPP, crop, and yield – Determinants of forest productivity – Entry – transfer – storage – allocation – Energy flow in detritus food web and relevance to decomposition – Impacts of forest harvesting on energy flow	4	13 & 18

Nutrient cycling in ecosystems – between ecosystems – within ecosystems – within individual tree – Nitrogen, the key element in many northern forests – Nutrient cycling and forest management	5	19
Genetic aspects of forest ecosystems and implications for forest management	6	4
Abiotic (physical) environment in ecosystems and their importance to forestry	7, 8, 9 & 10	7, 8, 9, 10 & 11
The special role of fire	12	12
Silvics (autecology) of major trees in Canada (part of the lab)	(References will be provided)	
Plant population ecology	13	5 & part of 15
Community ecology, biodiversity and forest practices	14	15 and 20
Forest succession	15	17 and part of 16
Forest ecosystem classification	16	part of 13
Recent issues in forest ecology	18 and 19	part of 21

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.

Evaluation

Quizzes/Assignments	15%
Lab Reports	25%
Midterm Exam	25%
Final Exam	35%
	100%

9 - POINT GRADE	PERCENTAGE EQUIVALENT	DESIGNATION
9	90 - 100	
8	80 - 89	EXCELLENT
7	72 - 79	
6	65 - 71	GOOD
5	57 - 64	
4	50 - 56	PASS
3	45 - 49	FAIL
2	26 - 44	
1	0 - 25	

Laboratory Schedule

WK	DATE	LAB #	DESCRIPTION
2	08/09	1	Introduction
3	15/09	2	Concept of Forest Ecosystem --- Ecological Analysis of Different Forest Types (1) Pine dry site and mixed-wood site
4 5	22/09 29/09	2	(2) Black spruce muskeg (bog) and pure aspen stand
6 7 8	(TBA) (Midterm Exam Week)	3	Forest Succession after Clearcutting --- A Field Study (a whole day lab)
9	27/10	4	Nutrient Cycling in Forest Ecosystem---Slide Demonstration and in-lab Worksheet
10 11	03/11 10/11	5	Autecology of Major Trees in Canada
12	17/11	6	Presentations of Lab 5.
13	24/11	7	Ecological Computer Simulation (FORTOON)
14	01/12	8	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.