

## Plants and People (Biology 3351-WA)

**COURSE OUTLINE: Winter 2023**

**COURSE TITLE:** PLANTS & PEOPLE

**COURSE CODE:** BIOL 3351 WA

**CREDITS:** 0.5

**WEEKLY HOURS:** Monday and Wednesday from 07.00 pm – 08.30 pm (course runs from January 9 to April 11, 2023)

**ROOM:** RB 2026

**REQUIRED TEXT:** Mauseth, J. D. (2012). *Plants and People*. Jones & Bartlett Learning; Others books and papers will be cited in the class time to time; additional readings & other course materials will be available via *desire2learn*

**INSTRUCTOR/PROFESSOR:** Dr. M. Shafiqur Rahman

**E-MAIL:** [mr Rahman7@lakeheadu.ca](mailto:mr Rahman7@lakeheadu.ca)

**OFFICE HOURS:** by appointment (set up via e-mail)

---

### **RATIONALE:**

Plants are the basis of all lives on earth because they *are* the primary produces. Plant communities in the ecosystem provide goods and services to man, the rest of the animal and microbial kingdom and maintain our planet's environment. Peking man's cave excavation revealed 300,000 year-old walnuts, hazel nuts, pine nuts and rose hips, roasted Chinese hackberry seeds. Thus, human has a very long association with plants. Over time our ability to manipulate plants became increasingly sophisticated. Human uses approximately 3000 plants as food, of which 200 plants have been domesticated as food crops and 20 agricultural plants are highly modified. We need to understand and appreciate the fundamental role plants play in our daily lives.

### **1. COURSE DESCRIPTION**

An introduction to the basic and essential relationship between plants (as food and resource) and humans (as dependent consumers), in the context of local food security, with emphasis on the origins and history of important temperate and tropical crop plants and their effect on civilization. Ethnobotany principles and methods will be introduced. A different independent community service learning project pertaining to local wild or cultivated plants will be designed each year, resulting in a written report.

**Course content:**

Plants and people have been interacting since prehistoric time. In this course we will discuss this interactions from the perspectives of history, geography, politics and economics. We will start with man's use of plants in development of society, hydraulic society, discuss agricultural organization, talk about green revolution and finally modern agriculture including genetic engineering. We will discuss how plant make our lives easier. We will discuss in a greater detail some plants of economic importance such as food, fiber, medicine and narcotic plants. Also, we will address ethnobotanical preparations.

**2. COURSE REQUIREMENTS**

- Attend to class
- Access to Desire2Learn (D2L)

**3. INTENDED LEARNING OUTCOME**

BIOL 3351 introduces you to the socioecological foundation and practice of plant propagation for human use and consumption

Specifically, you will:

- learn the interaction and relationship between plant and other organisms including human
- be introduced to how plants have keyed the development of permanent settlements and the exponential growth of human societies – from a few million people approximately 10 000 years ago to more than 7B people on our planet today!
- learn about the origins of agriculture, how we have domesticated plants, and the critical role that artificial breeding has played in feeding the world. Emphasis will be placed on crop growth since the Green Revolution, industrial agriculture, and modern, more holistic approaches
- learn the genetic modification, hybridization and selection techniques that are used to develop high yield plants
- gain awareness of the most important plants that provide us food, drugs, fibres, textiles, and other benefits
- understand and appreciate how plants have shaped the development of culture and modern societies

## **Analytical, technical, and applied skills**

You will:

- (a) develop a practical understanding of the challenges involved in managing our plant resources
- (b) improve critical reading skills through evaluation and review of assigned materials
- (c) improve written communication skills by writing -answer responses to questions related to assigned course readings along with a group report
- (d) improve technological communication skills through the production of a group seminar
- (e) improve group environment and project management skills

## **4. Syllabus**

- i. What are plants? Major Groups of Plants.
- ii. Basic and Essential Relationship between Plants and human
- iii. Plant Biogeography: The Distribution of Plants on Drifting, Changing Continents
- iv. Origins of Plant Domestication & Agriculture, Plants and Culture, Green Revolution to Modern Agriculture
- v. Agriculture and the Biosphere
- vi. Climate Change: The Roles of People, Plants, and Carbon Dioxide
- vii. Plant Adapting to Changing environments: Evolution, Diversification, and Systematics
- viii. Genetics: Transferring Information from Generation to Generation and Improvement the yield
- ix. Plant Breeding and Plant Biotechnology for Plant Improvement
- x. Economic Botany-Food plants, Spices and Herbs, Medicine and Drugs, Fibers, wood and Chemicals; ornamental plants
- xi. Ethnobotany: Use of Plants as Traditional and folk medicines

## **5. COURSE OUTLINE**

All activities will be asynchronous (lecture, discussion, question & answer, other in-class activities). I have provided a calendar indicating topics discussed and due dates of various assignments and tests. It should also be used as a concept map as to where you should be with respect to the material each

week. The course is designed to encourage active participation; thus, its success (& fun!) will depend on engaging one another in friendly discussion & debate will provide you an opportunity to apply knowledge gained through previous lectures and reading materials.

### **The tentative schedule is as follows:**

#### **January Schedule:**

**Week 2 Jan 9-11:** What are plants? Major groups of plants (Chapter 1)

**Week 3 Jan 16-18:** Basic and essential relationship between plant and human (Chapter 1: plants are important to people; Peoples are important to plants; types of interaction between organism; Online sources (course material will be posted): Ecosystem; Food chain & Food Web, Biogeochemical cycles)

**Week 4 Jan 23-25:** Plant Biogeography: The Distribution of Plants on Drifting, Changing Continents (Chapter 10); Check PPT slides (the course material will be posted for this lecture).

**Assignment 1 submission due: January 25, 2023.**

**Week 5 Jan 30:** Origins of plant domestication & agriculture, Plants and culture,

Green revolution to modern agriculture (Chapter 12)

#### **February Schedule:**

**WEEK 1 Feb 6:** Origins of plant domestication & agriculture, Plants and culture, Green revolution to modern agriculture (Chapter 12)

**Week 2 Feb 8-13:** Climate Change: The Roles of People, Plants, and Carbon Dioxide (Chapter 11) ; **Talk on oral presentation**

**Week 3 Feb 15:** Plant Adapting to Changing Environments: Evolution, Diversification, and Systematics (Chapter 9)

**Assignment 2 Submission due: Feb 15, 2023.**

**Winter Study Week : February 20-24 (No class)**

**Mid Term Exam : Feb 27, 2023**

#### **March Schedules:**

**Week 1 March 1:** Genetics: Transferring Information from Generation to Generation and improvement the yield (Chapter 8)

**Week 1 March 6:** Plant breeding and Plant Biotechnology for Plant Improvement (Chapter 12)

**Week 2 March 13: A panel Presentation (4-5 students in a group): 15 minutes**

for each group

**Week 3 March 15: A panel Presentation (4-5 students in a group): 15 minutes for each group**

**Week 3 March 20:** Economic Botany-Food plants (Chapter 13)

**Week 4 March 27-29:** Economic Botany- Spices and herbs (Chapter 14)

Economic Botany- Medicine and Drugs (Chapter 15); Fibers, wood and chemicals (Chapter 16)

**April Schedule:**

**Week 1 April 3-5:** Ethnobotany: Check class materials and PPT slides; Class material will be posted

**Term paper submission due : 3<sup>rd</sup> April (3-4 students in a group)**

**April 10 Easter Monday: No class**

**Final Exam: April 14-24**

## 6. COURSE STRUCTURE

Class lectures (1.5 hrs, twice a week)

Panel presentations by a group of 4-5 students in the class on selected topics

Term papers each written by a group of 3-4 students on a topic related to Plants & People.

## 7. COURSE EVALUATION

a) Assignment (two assignments): 15%

b) A one hour mid-term exam 20%

c) A panel presentation 10%

d) Written panel report as term paper 15%

e) A three-hour final exam 40%

**Table 1.** Chronological order of due dates for all tests & graded assignments of our course:

SL No.	Tests	Due Dates (2023)	Proportion of Grade
2	Assignment 1	Jan 25	5
2	Assignment 2	Feb 15	10
3	Midterm	Feb 27	20
4	Panel presentation	March 13, 15	10
5	Term paper	April 3	15
6	Final Exam	April 14-24 ( any day)	40

		<b>Total</b>	<b>100</b>
--	--	--------------	------------