

IB 103: Introduction to Plant Biology
Course Syllabus
Spring 2020

INSTRUCTORS

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For both instructors email is the GREATLY preferred method of contact. Please only phone in an emergency.

TEACHING ASSISTANTS

COURSE INFORMATION

Place and Time: 213 Gregory Hall, 3 - 3:50 pm, Monday, Wednesday, Friday, Jan. 21–May 6, 2020

Lab: 2082 Natural History Building.

Credit: 4 hours

Course website: <https://learn.illinois.edu/>

REQUIRED TEXTS and MATERIALS (both at Illini Union Bookstore)

Textbook: Stern's Introductory Plant Biology, 14th edition, James E. Bidlack and Shelby H. Jansky (2017), McGraw-Hill Education, **ISBN-13:** 978-1259682742.

iClicker: Register your iClicker at the course website.

General information: Plants, particularly flowering plants, cover the earth surface, and convert solar energy to chemical energy through photosynthesis, providing raw materials as the sources of food, feed, fuel, clothing, and shelter. Humanity and civilization depend on plants. Plant biology is the scientific study of plants and their relationship with the environment. This course provides comprehensive coverage of plant cells, organs, growth, reproduction, anatomy, morphology, taxonomy, genetics, and ecology.

Laboratory and greenhouse experiences complement classroom activities. This course is aimed at helping students to understand and appreciate the complexity and relationships of living systems and the role of plants in the society and environment. Specific learning outcomes include:

1. Understand the attributes and complexity of living organisms.
2. Have full knowledge of the chemical elements in cells.
3. Assess the main properties and functions of plant organs.
4. Evaluate various forms of energy in plants.
5. Understand the binominal system of nomenclature in plant classification.
6. Explain the transition from seedless vascular plants to seed plants.
7. Understand and appreciate the cause and consequence of diversification in flowering plants.
8. Be aware of the positive and negative impact of agriculture on our society and environment.

SUGGESTED LEARNING STRATEGIES FOR LECTURE

1. Read textbook (following lecture outline) once prior to and once after each lecture.
2. Print lecture ppt file prior to each lecture.
3. Participate fully in all active learning exercises.
4. Learn definitions of all unfamiliar terms that appear in slides, and in the assigned reading.
5. Don't procrastinate on homework. Homework questions emphasize the most important concepts and skills that you will need to master in order to do well on exams.
6. Review figures in text and on PPT slides to practice generating and interpreting figures. Pay particular attention to understanding how to interpret figures and tables.
7. Focus on those parts of the text that relate to lecture material.
8. Master all computational skills and data interpretation skills that are critical components of the scientific process; be able to apply these skills when confronting a new genetics problem.

GRADING AND ASSIGNMENTS

This course has both lecture and lab components. The lecture component will comprise 70% of your final grade, and the laboratory component will comprise 30%. For the lecture component, grades will be based upon 3 exams (2 midterms, worth 180 points each and a non-cumulative final, worth 180 points), and responses to 'clicker' questions in lectures (4 point per question for a maximum of 160 points). The grading breakdown for the laboratory is: pre-lab quizzes at 5 points each (13 x 5), weekly lab assignments at 10 – 45 points each, and fast plant lab report at 100 points. Each exam will be non-cumulative. All material covered in lectures, text readings, homework, and labs will be eligible for inclusion.

Make a note of the exam and lab dates. The only excuse for missing labs or exams is personal illness or tragedy in your immediate family. Notify your TA before the lab or Nick Morpew before the exam if you have a problem. Travel, weddings, jobs, other courses, etc., must be planned around the lecture, laboratory, and final exam schedule. If you have any questions regarding these policies, please see Ray Ming.

Exams: There will be NO MAKEUP EXAMS. If you have an unavoidable medical or personal emergency, an exception may be granted. You must notify the professor before the scheduled start time of the exam and be prepared to fully document your absence. Exams will cover lecture material, assigned readings, and material covered in homework and recommended problems. Format of exams will be a combination of multiple choice, true/false, definitions, and short answer/essay questions. Calculators may be used only to perform calculations. Storing formulae or notes in a calculator is a violation of course policy.

The Final Exam will not be comprehensive and will take place **on May 6**.

Class Attendance: Your grade will benefit from attendance and from reading the assigned material before lectures. In general, students that regularly attend lectures achieve a full letter grade higher final grade than those who do not. Also, we will ask questions using the ‘clicker’ system. During most lecture periods one or two questions will count for credit (2 points for participation and 2 points for correct answer). You may earn up to 160 points towards your grade in this way.

Class Participation: We strongly encourage you to speak up during lectures. Class participation allows you to check your understanding of lecture material, and allows us to clarify difficult or confusing material.

COURSE POLICIES

General:

This course will follow all policies in the Student Code: <http://studentcode.illinois.edu/>.

Academic Integrity:

This course will follow Article 3 of the Student Code http://studentcode.illinois.edu/article3_part1_3-101.html. This rule defines infractions of academic integrity, which include but are not limited to cheating, fabrication, and plagiarism. You are responsible for being knowledgeable what these infractions are for not following these guidelines. Plagiarism while writing the scientific manuscripts will be carefully monitored. If you do not feel you fully understand what constitutes plagiarism, see your TA or Ray Ming.

Accommodations:

If you require special accommodations, please contact Ray Ming. All accommodations will follow the procedures as stated in Article 1-110 of the Student Code (http://studentcode.illinois.edu/article1_part1_1-110.html)

LECTURE SCHEDULE, READING ASSIGNMENTS, AND HW DUE DATES

Week	Date	Lecture (Reading chapter)		Lab
1	1/20	Martin Luther King Jr. Day		Lab Intro., Phenotyping, & Lit. Review
	1/22	Introduction	Ming	
	1/24	What is Plant Biology (1)	Ming	
2	1/27	The Nature of Life (2)	Ming	DNA Extraction & PCR
	1/29	The Nature of Life (2)	Ming	
	1/31	Cells (3)	Ming	
3	2/3	Cells (3)	Ming	Experimentation Review & Set Up
	2/5	Tissues (4)	Ming	
	2/7	Tissues (4)	Ming	
4	2/10	Roots and soil (5)	Ming	The cell
	2/12	Roots and soil (5)	Ming	
	2/14	Stems (6)	Ming	
5	2/17	Stems (6)		Roots
	2/19	Leaves (7)	Ming	
	2/21	Leaves (7)	Ming	
6	2/24	Exam 1	Ming	Stems
	2/26	Flowers, fruits, and seeds (8)	Ming	
	2/28	Flowers, fruits, and seeds (8)	Ming	
7	3/2	Water in plants (9)	Ming	Leaves
	3/4	Water in plants (9)	Ming	
	3/6	Plant metabolism (10)	Ming	
8	3/9	Plant metabolism (10)	Ming	Asexual Reproduction and Senescence
	3/11	Growth and development(11)	Ming	
	3/13	Growth and development(11)	Ming	
9	3/16	Meiosis and alternation of generations (12) Spring	Ming	Sexual Reproduction
	3/18	Genetics and molecular biology (13)	Ming	
	3/20	Genetics and molecular biology (13)	Ming	
10	3/23	Spring break	Ming	
	3/25	Spring break	Ming	
	3/27	Spring break	Ming	
11	3/30	Plant breeding, propagation, and biotechnology (14)	Ming	Water Relations
	4/1	Evolution (15)	Ming	
	4/3	Plant Names and classification (16)	Ming	

12	4/6	Exam 2	Ming	Photosynthesis
	4/8	Plant Names and classification (16)	Ming	
	4/10	Domain Bacteria (17) Domain Archea (17)	Ming	
13	4/13	Kingdom Protista (18)	Ming	Bioinformatics and Evolution
	4/15	Kingdom Fungi (19)	Ming	
	4/17	Introduction to the plant kingdom: Bryophyte (20)	Ming	
14	4/20	Seedless vascular plants (21)	Ming	Plant Adaptations and Biodiversity
	4/22	Gymnosperm (22)	Ming	
	4/24	Gymnosperm (22)	Ming	
15	4/27	Angiosperm (23)	Ming	Biotechnology and GMOs
	4/29	Angiosperm (23)	Ming	
	5/1	Flowering plants and civilization (24)	Ming	
16	5/4	Ecology (25)	Ming	
	5/6	Biomes (26) (End of lecture)	Ming	
17	5/?	Final Exam (non-cumulative)		

Please see lab manual for a more detailed schedule of lab events and assignments.