

**Bergen Community College**  
**Division of Mathematics, Science, and Technology**  
**Department of Biology and Horticulture**

**General Biology II (BIO-203)**

**General Course Syllabus**

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<b>Course Title:</b>	General Biology II (BIO-203)
<b>Course Description:</b>	This course explores the evolution and biodiversity of representative organisms in the plant and animal kingdoms. Studies of plants investigate diversity, structure, and the physiology of absorption, transport, and photosynthesis. Students will examine the structure and life cycles of invertebrate and vertebrate animals. In a unit on Ecology, students will learn how living organisms interact with their environment. Laboratory exercises utilizing observation, experimentation, microscopy, and dissections provide practical demonstrations of the topics covered in lecture.
<b>Prerequisites:</b>	BIO 101 General Biology I
<b>General Education Course:</b>	Yes
<b>Course Credits:</b>	4.0
<b>Hours per week:</b>	6.0: 3 hours lecture and 3 hours lab
<b>Course Coordinator:</b>	Louis Crescitelli
<b>Required Lecture Textbook:</b>	Mason, K.A., G.B. Johnson, J.B. Losos, and S.R. Singer. <b>2015</b> . <i>Understanding Biology</i> New York, NY: McGraw-Hill, Inc.
<b>Required Laboratory Manual:</b>	Hickman, C.P., L.B. Kats, W.D. Dolphin, H.L. Dean, and R.S. Schuhmacher: <b>2014</b> . Customized Laboratory Manual General Biology II, (3 <sup>rd</sup> edition revised) Dubuque, IA: McGraw-Hill Companies, Inc.
<b>Supplementary</b>	Dissecting Kit (Recommended) <b>Materials:</b>

## **Student Learning Objectives:**

### **The student will be able to:**

1. Survey the biodiversity that exists in the plant and animal kingdoms.
2. Students will apply the scientific method of inquiry to gather and analyze biological data.
3. Develop laboratory skills, including the examination of living material, using the microscope, dissecting, and performing experiments to study physiological processes.
4. Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.
4. Identify the characteristics of the Plant Kingdom that distinguish plants from organisms in other Kingdoms.
5. Become aware of the diversity of the Plant Kingdom by completing an evolutionary survey of plant groups.
6. Investigate the adaptations that enabled plants to make the evolutionary transition from living in water to living on land.
7. Analyze the life cycles of plants and understand the concept of Alternation of Generations.
8. Examine key trends in the evolution of lower plants to higher plants, including the shift from dominance of the gametophyte to dominance of the sporophyte, and the shift from dependence of the sporophyte upon the gametophyte to dependence of the gametophyte upon the sporophyte.
10. Investigate the structure and function of plant organs including roots, stems, leaves, and flowers.
11. Analyze physiological processes in plants, including photosynthesis, absorption of water and minerals, and transport of water and minerals and carbohydrates.
12. Identify the characteristics that distinguish animals from organisms in other Kingdoms and understand how they are used to classify animals.
13. Trace the evolution and diversity of invertebrate and vertebrate animals by way of an evolutionary survey.
14. Investigate the structure and physiological processes of representative animals.
15. Identify the evolutionary advancements and adaptations to the environment that have given particular animals advantages in occupying and utilizing niches in their environment.

16. Examine the process of reproduction and trace the life cycles of representative animals.
17. Identify the levels of organization of ecology, including populations, communities, ecosystems, biomes, and the biosphere.
18. Analyze the interactions between living organisms and physical factors (temperature, light, and moisture) as well as biotic factors (other living organisms) in their environment.
19. Examine the importance of biological principles such as evolution, biodiversity, and ecology to society.

### Student Assessment Tools:

The above student learning objectives will be generally assessed or evaluated by instructors using a variety of **assessment instruments** including **lecture exams, laboratory exams, quizzes, laboratory reports, written reports, presentations, projects, etc.** The decisions concerning the type or types and number of instruments that are used in a specific section of the course will be left to the instructor of that section. This information, when given by the instructor should be recorded by the student in the **Student Assessment Section** of this document.

### Course Content

#### Lecture Topics:

Week	Topic	Chap.	Pages
1.	Introduction to the Plant Kingdom	26	566-589
	Definition of a Plant	26	567
	Characteristics of Plants	26	567-569
	The Importance of Plants		
	Economic Importance		
	Ecological Importance		
	Classification of Plants		
	Major Plant Groups		
	Ancestors of Plants – Green Algae		
	Nonvascular Plants		
	Ferns		
Gymnosperms			
Angiosperms			
Evolutionary Trends in the Plant Kingdom	26	567-569	
Structure and Life Cycles of vascular land plants	26	569-572 non-	
2.	Structure and Life Cycles of non-seed vascular plants	26	572-577
	Structure and Life Cycles of Gymnosperms	26	578-581
3.	Diversity of Angiosperms	26	582-585
	Monocots and Dicots	26	584

	Angiosperm Life Cycle	26	584-585
Reproduction in Angiosperms	30 677-701 Structure of the Flower	30	679
	Pollen and Egg Production	26	585
	Embryo Sac Formation	26	584
	Pollination and Fertilization	26	585
		30	681-686
	Embryo Development	30	686-688
	Seeds and Fruits	30	688-692
	Germination	30	692-694
	Asexual Development	30	696-697
4.	Diversity of the Animal Kingdom		
	Characteristics of Animals	27	590-599
	Classification of Animals	27	596-599
	Phylum Porifera	27	600
5.	Radiate Animals		27
	600-602		
	Cnidaria and Ctenophora		
6.	Phylum Platyhelminthes	27	602-603
	Phylum Nemertea		
	Phylum Rotifera	27	603-604
7.	Lophotrochozoana		
	Phylum Mollusca	27	604-605
	Phylum Annelida	27	606-608
	Lophophorates		
	Bryozoa and Brachiopoda	27	608
8.	Ecdysozoans		
	Phylum Nematoda	27	609-610
	Phylum Arthropoda	27	610-613
	Coelomate Deuterostomes		
	Phylum Echinodermata	27	614-615
	Phylum Hemichordata		
9.	Diversity of the Chordates		27
	615-616		
		28	621-650
	Characteristics	27	616
	Subphylum Cephalochordata	28	622-623
	Subphylum Urochordata	28	622
	Subphylum Vertebrata	28	623-650
	Characteristics of Vertebrates	28	623

	Fishes	28	624-628
10.	Amphibians	28	628-630
	Reptiles	28	630-634
11.	Birds	28	634-637
	Mammals	28	637-647
12.	Ecology		
	Introduction to Ecology		
	The Biosphere		
	Levels of Organization in Ecology		
	Population Ecology	38	912-933
13.	Communities		39 934-967
	The Niche	39	935-936
	Competition	39	936-939
	Predator-Prey Relationships	39	939-940
	Plant Defenses against Herbivory	39	940-941
	Animal Adaptations for Defense	39	941-943
	Warning Coloration and Camouflage	39	941
	Mimicry	39	942--943
	Symbiosis	39	943-946
	Mutualism		
	Commensalism		
	Parasitism		
	Succession	39	948-950
14.	Ecosystems		
	Biogeochemical Cycles	39	950-955
	Energy Flow in Ecosystems	39	955-959
15.	Biomes		40 968-985
	Human Impacts on the Biosphere	40	978-985

### Laboratory Schedule:

Week	Exercise	Pages
1.	Liverworts and Mosses (Bryophyta)	1-8
2.	Ferns (Pterophyta)	15-23
	The Pine and Other Gymnosperms	25-29

3.	The Flower, Development of the Embryo	31-43
4.	Fruits and Seeds Seed Germination and Seedling Development	45-49 51-53
5.	Survey of the Animal Kingdom Exercise 8 The Sponges: Phylum Porifera Exercise 9 The Radiate Animals:	109-118 119-135
6.	Exercise 10 The Flatworms Phylum Platyhelminthes	137-156
7.	Exercise 12 The Molluscs Exercise 13 The Annelids	169-186 187-204
8.	Exercise 11 Nematodes and Four Small Protostome Phyla Exercise 14 The Chelicerate Arthropods Exercise 15 The Crustacean Arthropods Exercise 16 The Arthropods: Myriapods and Hexapods	157-168 205-210 211-222 223-244
9.	Exercise 17 The Echinoderms	245-260
10.	Exercise 18 Phylum Chordata Subphylum Urochordata Subphylum Cephalochordata  Exercise 19 Phylum Chordata The Fishes-Lampreys, Sharks, and Bony Fishes	261-269 271-291
11.	Phylum Chordata Exercise 20	293-303

	External Structure	294-295
	Class Amphibia: The Frog	
	Exercise 20 B Skeletal System	297-299
	Exercise 20 C Skeletal Muscles	299-303
12.	Phylum Chordata	
	Exercise 20	
	Class Amphibia: The Frog	
	Exercise 20 D Digestive, Respiratory, and Urogenital Systems	304-306
	Exercise 20 E Circulatory System	307-312
	Exercise 20 F Nervous System	313-314
13.	Exercise 21	
	The Reptiles	315-319
	Turtles	
	Exercise 22	
	The Birds	321-325
14.	Symbiosis Laboratory Exercise	Handout
15.	Review and Clean up	

**Student Assessment:**

A. Unit Examinations: number_____	_____%
B. Laboratory Work .....	_____%
C. Reports/Projects .....	_____%
D. Class Participation .....	_____%
E. Other .....	_____%
<b>TOTAL .....</b>	<b><u>100 %</u></b>

**If you have a medical condition or develop a medical condition during this semester, which prevents you from fulfilling the requirements of this course, you must notify your physician. You and your physician must decide whether or not it is appropriate for you to remain in this course. If the decision is to remain in this course, please obtain a letter from your physician indicating that your continued participation in this course is appropriate and present it to the Department Chair.**

**Faculty Addenda: As per individual faculty member**

**Lecture Attendance:** As per instructor;

**Lab Attendance:** As per instructor;

**Policy Concerning Late Assignments:** As per instructor;

**Policy Concerning Make-Up Testing:** As per instructor;

**Safety Information:** As per instructor and assigned exercise;

## **College Policies:**

### **Student Responsibility**

Students will be held responsible for reading all pertinent information in college publications regarding withdrawals, course drops, college deadlines, and tuition refunds. Students are responsible for compliance with the rules and regulations as stated in college publications.

### **Absence of Instructor**

Students are expected to wait twenty minutes for a faculty member to come to class. If at the end of twenty minutes, the faculty member does not come, the students should sign an attendance sheet, which indicates the course, date, and time. A student should deliver the attendance sheet to the divisional office (A304) if between 9:00 a.m. and 5:00 p.m. or to the Evening Office (C107) if before 9:00 a.m. or after 5:00 p.m. Students cannot be penalized by faculty for not waiting longer than twenty minutes.

### **Academic Dishonesty and Plagiarism**

Bergen Community College is committed to academic integrity – the honest, fair and continuing pursuit of knowledge, free from fraud or deception. Students are responsible for their own work. Faculty and academic support services staff will take appropriate measures to discourage academic dishonesty. **Plagiarism** is a form of academic dishonesty and may be a violation of U.S. Copyright laws. Plagiarism is defined as the act of taking someone else's words, opinions, or ideas and claiming them as one's own.

## **Consequences of Violations Academic Integrity**

### **A. Instructor's Sanctions for a Violation**

The faculty member will determine the course of action to be followed. This may include:

- Assigning a failing grade on the assignment;

- Assigning a lower final course grade;
- Failing the student in the course
- Other penalties appropriate to the violation;

In all cases, the instructor shall notify the Vice President of Student Services of the violation and the penalty imposed. The student has the right to appeal the decision of the instructor to the appropriate department head.

## **B. Institutional Sanctions for Violations**

When a violation of academic integrity has been reported regarding a student, the Vice President of Student Services may impose disciplinary penalties beyond those imposed by the course instructor, which may include suspension or dismissal from the College. The student shall have the right to a hearing before the Vice President of Student Services or a designated judicial affairs committee. Judicial procedures governing violations of academic integrity are contained in the student handbook.

### **Class Attendance**

All students are expected to attend punctually every scheduled meeting of each course in which they are registered. Attendance and lateness policies and sanctions are to be determined by the instructor for each section of each course. These will be established in writing on the individual course outline. Attendance will be kept by the instructor for administrative and counseling purposes.

### **Eating and Drinking**

Eating or drinking in classrooms, lecture rooms, laboratories, gymnasium, swimming pool, or passageways is forbidden. Covered beverages only are permitted in the library. Eating and drinking are permitted in cafeteria and vending areas only.

### **Learning Assistance**

#### **Henry and Edith Cerullo Learning Assistance Center**

The Tutoring Center, English Language Resource Center, Math Walk-In Center and Writing Center are collectively known as the Henry and Edith Cerullo Learning Assistance Center. The Cerullo Learning Assistance Center is located in the Pitkin Education Building, in Room L-125. The telephone number is (201) 447-7489. The Learning Assistance Center, staffed with peer and professional tutors, offers free individual and group tutoring, supplemental instruction, and online tutoring for subjects offered at the College. The Center provides alternative approaches to problem solving and organizational skills. Tutors help clarify classroom lectures and textbooks and help students prepare for exams. These services build student self-confidence and reduce fear of failure. The Center is equipped with the latest technology and software, including tapes, books, review sheets, exercises and software.

### **Services for Students with Disabilities**

Bergen Community College aims to create inclusive learning environments where all students have maximum opportunities for success. Any student who feels he or she may need an accommodation based on the impact of a disability should contact the Office of Specialized Services at 201-612-5269 or via email at [ossinfo@bergen.edu](mailto:ossinfo@bergen.edu) for assistance.

### **Sidney Silverman Library**

Main Building, Pitkin Education Center, L-wing, 2nd Floor.

Paramus Library Hours: (201) 447-7131 or visit

<http://www.bergen.edu/library/calendar/gcal.htm>

Paramus Service Desk: (201) 447-7970

Meadowlands Location: 1280 Wall Street, Lyndhurst 2nd Floor

Meadowlands Library Hours: <http://www.bergen.edu/library/calendar/gcal.htm>

Meadowlands Service Desk: (201) 301-9692

[www.bergen.edu/library](http://www.bergen.edu/library)

### **Testing Services**

The Bergen Community College Office of Testing Services (OTS) is located in Room S127. OTS serves the college community by identifying, developing, procuring, administering, processing, and/or evaluating examinations, which meet a variety of administrative and instructional needs. To contact the OTS, please call (201) 447-7202. The Office of Testing Services administers makeup tests as a service for students who, for compelling and exceptional reasons, have missed a scheduled classroom examination. Students must receive prior permission from and make arrangements with their course instructors to take these examinations, under specific conditions, in the Office of Testing Services, Room S-127.

### **WebAdvisor**

WebAdvisor is a web interface that allows students to access information contained in Datatel's Colleague, the administrative database used by Bergen Community College. Students may use WebAdvisor to register for classes, to pay tuition and fees, to view their class schedules, to check grades, to check on progress toward degree requirements, etc. WebAdvisor accounts are available for all students enrolled in credit programs. New students are strongly encouraged to attend an in-person registration or advisement session before using a WebAdvisor account. Eligible students without WebAdvisor user names and passwords may access their WebAdvisor account by going to [go.bergen.edu](http://go.bergen.edu) and selecting "I'm new to WebAdvisor." Then, follow the on-screen directions. Check the WebAdvisor FAQ for answers to common questions, such as how to reset your password. Students must have a valid e-mail address on file with the

College to use WebAdvisor

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