Augustana College

General Botany · BIOL220 · Winter 2016/2017 · 3 credits

Instructor
Dr. Rafael Medina
rafaelmedina@augustana.edu
Office: Hanson Hall of Science 309
Phone: (309)794-3438
Twitter: @bryomedina I use #AugieBIOL220 for class-related content (optional)
Website: http://rafamedina.com

Office hours: M&W 1-2 pm; F 8:30-9:30 am or by appointment (you are welcome to send me an email).

Email policy: Under ordinary circumstances, I will reply all your emails within a 24 hour time frame (M-F), most likely between 8:00 am and 6:00 pm. Please, include BIOL220 in the subject.

Course schedule and locations
MWF. Hanson Science Building 305. 10:00 am to 11:15 am
Lab 01: Tu Hanson Science Building 323. 8:30 am to 10:20 am
Lab 02: Tu Hanson Science Building 323. 12:30 pm to 2:20 pm
Lab 03: Tu Hanson Science Building 323. 2:30 pm to 4:20 pm

Course Goals
This course is an introduction to botany, the scientific study of plants. We will focus mainly on flowering plants, although we will also cover the rest of the lineages of the "green line" and even fungi. The main goal is to help you understand the biological aspects of these organisms (morphology, physiology, systematics, evolution and ecology) and their essential role in worldwide ecology, human society and economics. In other words: we will work to overcome the so-called *plant blindness* that affects most of us, defined as…

"…the inability to see or notice the plants in one's own environment—leading to: (a) the inability to recognize the importance of plants in the biosphere, and in human affairs; (b) the inability to appreciate the aesthetic and unique biological features of the life forms belonging to the Plant Kingdom; and (c) the misguided, anthropocentric ranking of plants as inferior to animals, leading to the erroneous conclusion that they are unworthy of human consideration."

(From Wandersee JH & Schussler EE. 1998. A model of plant blindness. 3rd Ann Ass Meeting of the 15 Lab, LSU)

General Botany is a core course of the Biology Curriculum. You can find the course outcomes on Moodle.

Relation to College Outcomes
The following College Outcomes will be central for the development of the course: understand, analyze and wonder.

Understanding botany means not only to assimilate new knowledge and integrate it into the whole picture of life sciences, but also to connect plant science with other fields that affect our society at different scales, from food security and biodiversity conservation to ethnology and cultural heritage.

Botany will also pose multiple opportunities to *analyze* theories and hypotheses, learn about why they were formulated and discuss them critically in a scientific context.

Hopefully, this course will also fuel your intellectual curiosity and make you *wonder* about plants and the relationships that link us to them beyond the extent of the next ten weeks. This includes becoming independent at searching reliable and relevant sources.

Required Texts

Graham LE, Graham JM, and Wilcox LW. 2006. Plant Biology. 2nd edition. Upper Saddle River: Pearson, Prentice Hall. (also available in e-copy)

Koontz JA [comp.]. 2015. Biology 220, General Botany Lab Manual, Fall 2012. Rock Island: Augustana College. (*provided)*

Optional Reference Text

Rushforth SR, Robbins RR, Crawley JL, and van de Graaff KM. 2016. A Photographic Atlas for the Botany Laboratory. 7th edition. Englewood: Morton Publishing Company. (2012's 6th edition or e-versions are fine too)

Course Fee

The Department of Biology has a policy of charging a non-refundable lab fee of $20 for this course. This fee covers your lab manual and is used to buy supplies for the lab. The fee appears on your bill from the business office.

Prerequisites

Cell Biology (BIOL210). A familiarity with the structure and functions of plant cells is assumed, including a basic knowledge of photosynthesis and respiration.

Special Needs

Students requiring classroom/lab accommodations or modifications because of a documented need should contact the Dean of Students, Dr. Campbell, by calling 7533.

Academic Integrity/Honor Code

I expect you to maintain the highest ethical and scientific standards, honesty and courtesy at all times. Students creating disturbance during class/lab that interferes with the ability of other students to learn will be asked to leave. Evidence of dishonesty during exams, research projects and other evaluations will earn a zero (0). Additional penalties may also apply and the Honor Council will be notified. Please refer to the Honor Code website for more information. As a reminder (from Davis BG. 1993. Tools for Teaching. Jossey-Bass Publishers: San Francisco):

"Cheating means getting unauthorized help on an assignment, quiz, or examination. (1) You must not receive from any other student or give to any other student any information, answers, or help during an exam. (2) You must not use unauthorized sources for answers during an exam. You must not take notes or books to the exam when such aids are forbidden, and you must not refer to any book or notes while you are taking the exam unless the instructor indicates it is an "open book" exam. (3) You must not obtain exam questions illegally before an exam or tamper with an exam after it has been corrected.

Plagiarism means submitting work as your own that is someone else's. For example, copying material from a book or other source without acknowledging that the words or ideas are someone else's and not your own is plagiarism. If you copy an author's words exactly, treat the passage as a direct quotation and supply the appropriate citation. If you use someone else's ideas, even if you paraphrase the wording, appropriate credit should be given. You have committed plagiarism if you purchase a term paper or submit a paper as your own that you did not write."

Expectations

Before and after class: You must read in advance the sections of the text book or the lab manual that will be addressed during the session or lab in order to be fully prepared. Other materials (papers, news, blog posts, podcast episodes, videos…) may also be assigned via Moodle. You are responsible to keep track of these assignments. Lectures, discussions and activities will rely on the assumption that you are prepared for class, so we can focus and deepen on concepts with special interest or difficulty. Each 3-credit course requires 8-10 hours of out-of-class student work per week. Because you do not earn credit for the lab, 2 hours per week can be counted towards this. Therefore you should be spending a minimum of 6-8 hours/week outside of class reading the text book, revising your notes, etc.

During class: I expect you to take notes during class. Slides and other materials will be available via Moodle after each session. They will be useful as reminders or summaries, but they are not intended to include all the important content, discussions, extra examples that you need to study. The rationale for this decision is research based: there is extensive evidence suggesting that (good) notes improve learning by enhancing attention and synthesis (For details and a compilation of references see Nilson, LB. 2016. *Teaching at its best*. San Francisco, CA. Jossey-Bass).

Punctual attendance is expected at all classes and required for all lab sessions. Every student is allowed two unexcused absences. I reserve the right to reduce your class participation/assignments grade by 5% for every extra unexcused class absence (including arriving too late or leaving too early). Travel is a not valid excuse.

Grading Policies
Your grade for the course will be based on a 1,000 point system:

Class participation & assignments	7%	70 pts
Weekly quizzes	8%	80 pts
Presentation (The plant of the day)	10%	100 pts
Lab	20%	200 pts
Exam 1 (Dec 5th)	15%	150 pts
Exam 2 (Jan 23rd)	20%	200 pts
Semi-comprehensive Final (Feb 14th)	20%	200 pts

Grades will be determined on a point basis (not percentages); they will not be rounded up, nor curved.

980-1000 = A+	880-899 = B+	780-799 = C+	600-699 = D
920-979 = A	820-879 = B	720-779 = C	<600 = F
900-919 = A-	800-819 = B-	700-719 = C-	

Grades will not be revealed via telephone or email under any circumstances (Family Educational Rights and Privacy Act of 1974). You can check your exams, grades and quiz results during office hours. Late work is not acceptable on a regular basis, but it might be accepted under some extreme circumstances at my discretion with a 5% penalty if turned in the 12 hours following the original deadline. A 10% penalty accrues for each day after. Under exceptional circumstances, oral make-up exams may be administered if agreed upon prior to the exam, but they will likely be harder than the original one.

Class Participation & Assignments
Participation during class (or in the Moodle forum) is central for the development of the course, and will be graded up to a maximum of 70 points. You will have the choice to self-report your participation weekly.

Weekly Quizzes
Every Friday there will be a multiple choice quiz on Moodle with questions that will prepare you for the exams. These quizzes will be due the following Tuesday <u>at noon</u> and will count up to 10 points each. I will drop your two lowest grades (the maximum number of points you will get with these quizzes is 80).

The plant of the day
Every student will be required to pair with a classmate and prepare a short presentation (about 5 minutes) delivered during class on a particular plant species with economic or social relevance. The idea is to bring awareness on the importance of plant diversity in our lives choosing a plant that *you* find personally interesting (even if you never thought about it before!). Without the current plant diversity you would not have chocolate, wine, wood, aspirin and thousands of other products and goods that have shaped our lifestyle, history and culture.

You will find in Moodle an extensive list of choices, clarifications and a rubric for this activity. Yes, the exams will include a question related to the content of these presentations.

Exams
Two exams plus the final semi-comprehensive exam are scheduled. I will return exams to you for in class review or during office hours, but you may not keep or copy them. Failure to comply with this policy constitutes academic misconduct. No one leaves the room during an exam unless there is a medical emergency; please use the restroom before the exam starts. All exams are individual efforts.

Tentative class meeting and exam schedule

Week	Date	Tentative Topic	Text Chapter [Pages]
1	Nov 14	Introduction	
	16	What are plants? Why are they important to us?	1 [3-7, 10-16]; 2
	18	Cell types & tissues	4 [73-78]; 8 [136-144]
2	21	Roots: morphology & anatomy	10 [171-182]
	23	Stems: morphology & anatomy	9 [152-154, 157-162]
	25	*Thanksgiving break*	
3	28	Leaves: morphology and anatomy	11 [192-198, 202-205]
	30	Review on morphology. Anatomic modifications	
	Dec 2	Photosynthesis	5 [85-96]
4	**5**	**Exam 1: plant anatomy, morphology, physiology I**	
	7	*Online plant ID workshop*	
	9	Transport in plants	9 [154-157] & 11 [199-202]
5	12	Classification and nomenclature	13 [237-242]
	14	Crash course on mycology: Fungi & Lichens	20
	16	Algae and life cycles	17, 19
WINTER BREAK			
6	Jan 9	Bryophytes	21 [386-391]
	11	Ferns and allies	21 [391-398]
	13	Intro to Gymnosperms	22
7	16	Gymnosperms	22
	18	*Symposium day*	
	20	*Simulation: Describing biodiversity*	
8	**23**	**Exam 2: plant physiology II; diversity (all but angiosperms)**	
	25	Flowers and fruits. Origin of angiosperms	23
	27	Angiosperms (cont.)	23
9	30	Angiosperms (cont.)	23
	Feb 1	Ecosystems structure and dynamics	25
	3	World biomes	26, 27
10	6	Ecology & Natural Divisions of Illinois	
	8	Conservation issues: *Ecological controversy*	
	10	End of course wrap up	
Finals	**Feb 14**	**Final Exam, 9-11 am on angiosperms and ecology. 25% comprehensive**	

Lab Syllabus for BIOL220

Due to OSHA regulations no shorts, skirts, sandals/flip-flops, or the like can be worn during lab. Shirts must also have sleeves. Food and/or drink (including gum) are not allowed in the lab. Class expectations on punctuality, participation, preparation, late work, etc, also apply to the lab sessions (see attendance policy below). Be sure to bring your lab manual with you every week. Some may also find it beneficial to bring Graham et al. (2006) and/or the optional Rushforth et al. (2016) photo atlas. The lab manual may be updated with additional lab instructions and materials.

Attendance is expected to all lab sessions. A single unexcused lab absence results in a zero for any quiz or assignment of that session. A second unexcused lab absence results in a failing grade (F) in BIOL220. You may switch lab section in the event of a planned and approved absence, but you must inform me in advance.

Lab Grade

Your 20% lab grade (200 pts) will come from the following:

3 Lab quizzes	80 pts (25, 25 and 30)
Field trip report	20 pts
Ecological research project	100 pts (See itemized grade in the lab manual)

The ecological research project is a term-long, inquiry-based, group project. Your research team will conduct an ecological experiment on a plant of your choosing simulating the kind of research you may do in graduate/health science school. The details on this are in your lab manual and on Moodle.

Tentative Lab Schedule

Week	Date (Tues.)	Lab topic	Assignment(s)
1	Nov 15	Introduction Ecological Research project	Begin treatments. Experimental plan due **next week**
2	22	Microscope & The Plant Cell	Presentation of experimental plan. Methods draft due Friday **@ 12 pm**
3	29	Roots & Stems & Leaf anatomy	Methods due Friday **@ 12 pm**
4	Dec 6	"Field trip": QCBC	**Quiz 1**. Intro draft due Friday **@ 12 pm**
5	13	Algae and fungi	End treatments. Intro due Friday **@ 12pm**
		WINTER BREAK	
6	Jan 10	Bryophytes & Ferns	Stats report draft due Friday **@ 12pm**
7	17	Gymnosperms	Stats report due Friday **@ 12pm**
8	24	Angiosperms: Flowers	**Quiz 2**
9	31	Angiosperms: Fruits	Figures due Friday **@ 12 pm**
10	Feb 7	Final poster preparation	**Quiz 3.** Final poster due **Feb 13 @ 12 pm**

* semi-comprehensive with some questions (25%) covering the entire term

Calculating your grade on BIOL220

		Your points	Max points
Participation	During class (Report weekly)		**70**
	Forum discussions (Report weekly)		
	Workshop on plant ID (week 4)		
	Simulation: biodiversity description (week 7)		
	Ecological controversy debate (week 10)		
Quizzes	Week 1		**80** (The two lowest grades are dropped)
	Week 2		
	Week 3		
	Week 4		
	Week 5		
	Week 6		
	Week 7		
	Week 8		
	Week 9		
	Week 10		
Plant of the day	Presentation during class		**100**
Lab	Quiz 1		**25**
	Quiz 2		**25**
	Quiz 3		**30**
	Field trip report		**20**
	Poster: Experimental plan		**10**
	Poster: Materials and Methods		**20**
	Poster: Introduction		**20**
	Poster: Stats report		**10**
	Poster: Figures		**10**
	Final poster		**20**
	Team member evaluation		**10**
Exams	Exam 1 (week 4)		**150**
	Exam 2 (week 8)		**200**
	Final exam (week 10)		**200**
Grade			**1000**

BIOL220. Graphic syllabus