

Introductory Botany – BOT 1010  
Department of Biological Sciences, Florida International University  
Spring 2018 Syllabus & Schedule

**Please read this syllabus and schedule *thoroughly* by the first day of class and ask any questions ASAP. You are responsible for knowing this information!**

**Your instructor:**

John Cozza, [jcozza@fiu.edu](mailto:jcozza@fiu.edu) (for quickest response use this address, not Blackboard)  
\*\*\*Please include "BOTANY" in the subject line of all emails\*\*\* Phone: 305-348-4932.

**Office hours in OE 216: Mon 2-3, 5-6+; Tues 11-12, 2-3, & 5-6+; Weds 2-3, 5-6+ (but not Weds evenings 2/7 and 3/7),** informally before or after class, or by appointment.

**Lecture and discussion (attendance is required):**

MWF 4:00 – 4:50 in OE 134

**Introduction:**

In this non-biology majors course, we will explore the amazing—and yet secret to many—lives of plants. You will find out how plants obtain food literally out of thin air, and how they find mates and fight off enemies. You will appreciate the diversity of plants including some truly bizarre ones, and study their essential roles in our lives. We will employ active and interactive learning, with experiences including observation, writing, and analysis.

**Prerequisites:**

None, just curiosity and interest. Review of the relevant concepts from high school biology would be helpful!

**Learning goals:** By the end of the course, you will be able to

- Explain how plants function, reproduce, and are adapted to their environment
- Discuss the importance of plants to people and other organisms
- Recognize major groups of plants, and identify and discuss evolutionary trends
- Interpret the results of basic botanical experiments and other studies

**Text (required):**

Graham, L., J. Graham and L. Wilcox. 2015. Plant Biology, 3<sup>rd</sup> ed., LJLM Press, available for \$40 as an ebook from [http://www.ljlm.com/plant\\_biology.html](http://www.ljlm.com/plant_biology.html). Do not make and share copies—*this would be stealing from the authors, and is illegal.*

This book will provide essential background reading for most of the topics covered in class. Topics not adequately covered by the text will be supported by required readings posted on Blackboard. If you prefer an actual physical book, the out-of-print 2<sup>nd</sup> edition is acceptable. Two copies are on reserve at the library, under "RESB157.04—Cozza."

**Clickers (required):**

We will use **i-clickers** (the device only, *not the app*—available at the bookstore) to gauge your understanding of the concepts, and to stimulate thought and discussion.

**You will earn extra credit by using the clickers.** Clicker questions might appear *in any class meeting*. You are responsible for the proper functioning of your clicker.

**Blackboard:**

Here you will find the course website, which includes updated syllabus and schedule, course announcements, lecture powerpoints, required additional readings, supplemental resources, discussion board, and gradebook. Go to [fiu.blackboard.com](http://fiu.blackboard.com)

**Grading:**

Midterm exams (3 @ 15%)	45%
Final exam	20%
Assignments (3 @ 5%)	15%
Class participation activities	20%
Extra credit (clickers)	up to 5% extra
Service activity	required to get a grade

Grade scale: A = 93-100%, A- = 90-92%, B+ = 87-89%, B = 83-86%, B- = 80-82%, C+ = 77-79%, C = 70-76%, D = 60-69, F = 0-59%.

Course grades will be rounded to the nearest 1%. So, for example, if your course grade comes out to 89.5, that will round up to 90 and an A-, but an 89.4 will round down to 89 and a B+. **There will be no exceptions, no curving, no grades dropped, and no unearned points will be added** to anyone's grade. The only extra credit available will be that earned by using your clicker, and by participating in and writing about selected enrichment activities announced in class.

**Exams:**

**Midterm exams** will last 50 min, and each will consist of about 50 scantron questions: true/false, matching, and multiple choice. Some of the questions will involve interpreting diagrams or graphs. The mandatory **final exam** will last the full 2 hours, with about 100-120 scantron questions, of the same types as on the midterms. About 1/4 of the final exam will cover the new material since exam 3, with the rest being divided roughly evenly among the material for exams 1, 2, and 3.

Everything covered or done in class (including participation activities), and supported by the corresponding chapters and readings, may be on the exams. Exam questions will vary in difficulty from easy to challenging. A solid understanding of the concepts and examples discussed should be enough to pass (C), but to achieve a superior grade (A), you will also need to synthesize concepts and apply them to new situations.

Please bring a #2 pencil, eraser, and photo ID to all exams. *You may not have a phone, tablet, watch, or any other kind of electronic device on you*—they must be turned off and put away in your bag or backpack. The scantron will be provided. Allow extra time to arrive on exam days. If you are more than 30 minutes late for an exam or the first person has completed it and left the room, you will not be able to take the exam.

If you miss an exam for a valid university-approved reason (medical emergency, serious accident, death in the immediate family, jury or military duty, FIU athletics, etc.), you would need to let me know ASAP (beforehand if possible) and provide official documentation (hospital admit, doctor's or military orders, police report, coach's letter, etc.). If you miss a midterm and document it, the final exam grade would also become the make-up grade for the missed midterm. If you miss the final and document it, you would receive an IN grade, and then you must take a written (essay questions) or oral make-up exam in the spring semester.

### **Written assignments:**

You will have three outside-of-class written assignments. Details will be given in class. Note the dates on the schedule. **We will use turn-it-in.com to ensure originality.**

- 1) **Service activity report.** You will write a 2-3 page (typed double-spaced) description of what you did, what you learned, and how you helped with plant conservation in your required volunteer service work (see below).
- 2) **Outdoor plant safari.** You and a partner will find and photograph examples of the major groups of plants and their key features, and make a labeled powerpoint.
- 3) **Ecological footprint quiz.** You will take an online interactive quiz about the impact of your lifestyle on the planet, and complete a 2 page worksheet. The worksheet and instructions will be posted on Blackboard. To facilitate grading, **you must use the form and you must type to receive credit.** No handwritten responses can be accepted.

### **Class participation activities:**

On most class days, we will do an in-class interactive activity. These may be discussions of plant-related controversies, case studies, current events, or feedback about the lecture or reading and your understanding of it. For each such activity, you will be asked to write and hand in a brief response in class. **You must be present in class to participate, and you cannot make up activities afterwards!\***

Your written responses will be graded as "full effort" (1 point), "partial effort" (0.5 point) or "minimal effort or copied" (0 point). To earn full credit, you must show clear evidence of thought and engagement, and communicate that in concise, complete sentences. You may discuss your ideas with your neighbor, but your written response must be entirely your own original work.

Your final participation grade will be the percentage of the total possible points you earned (with no penalty for missing one activity). For example, if there were 20 participation activities total and you earned 17 points, your participation grade would be  $(17 + 1) / 20 \times 100 = 90$ . *Participations count more than an exam, and are an easy way to **raise your grade** if you attend every class, or conversely, a sure way to lower your grade if you miss class.*

\* If you miss more than one participation activity for an FIU-approved reason (see above for exams), bring me documentation ASAP (beforehand if possible) so that we can make an alternative arrangement. *You must document your absence within one week.*

### **Clicker extra credit:**

You will earn 1 raw clicker point for participating in each question, and 1 additional point if you answer it correctly. At the end, your raw point total will be scaled to a maximum of 5% extra credit, with the highest total in the class scaling to the full 5%. For example, if you earn 145 raw clicker points and the person with the highest total of raw points got 172, then you would get  $145/172 \times 5 = 4.22$  points added to your course grade.

### **Service activity:**

You will do a half-day of relevant volunteer service such as helping with habitat restoration or tree planting (e.g. with TREEmendous Miami, Urban Paradise Guild, or Miami-Dade County); volunteering at a botanical garden (e.g. Fairchild, UM's Gifford Arboretum, FIU Nature Preserve), or giving an educational lesson about plants or conservation to a school or community organization. I will give some suggestions for upcoming activities as the semester progresses. You may choose an activity that I don't mention, but then *please discuss your idea with me in advance*. Don't wait until the last minute to explore this! **You must do an approved and officially verified service activity to receive a grade in the course.** One of your written assignments will be a brief report on what you accomplished in your service activity.

### **Associated Laboratory:**

The laboratory (BOT 1010L) is a separate one credit course taught by a graduate teaching assistant. Although lecture and lab are independent, the topics and activities are mutually reinforcing. However, topics may not be covered simultaneously in lecture and lab. Labs meet weekly, beginning on the first week of classes. The lab syllabus is posted on Blackboard.

The laboratory work, outdoor activities, and field trips will provide hands-on experiences, including experiments, gardening, and the identification of local plants. For the fullest appreciation of plants and botany, **it is highly recommended that you take the lab at some point!** Although I am always eager to receive feedback from you about the lab as well as the lecture, please ask your TA first if you have any lab-specific questions or concerns.

### **General expectations and how to succeed:**

- **Read the text** and any additional assigned readings thoughtfully *before* the corresponding lecture. In a pinch, skimming is better than not reading at all.
- **Attend every class** and *actively* participate in discussions, interactive questions, and activities. Research by Dr. Helen Young (Middlebury College) showed a 2% lower grade for each missed hour of class in a similar course. Likewise, many studies show that active, social engagement with the material produces meaningful, enduring learning.
- **Take good lecture notes**, *preferably handwritten*. Indicate any areas of difficulty to look up after class. Structure your notes as lists, outlines, concept maps, or in some other form that is useful to you. This initial processing of the information begins the process of making it your own, aka *learning* it!

- **Minimize distractions.** Texting, social media, online activity, videos, etc. erases learning, according to research. In class, it also unfairly distracts your neighbors.
- **Ask questions;** ask for clarification ASAP. There are no stupid questions!
- **Help your neighbor** and contribute to the group. If you help each other, everyone will do better including you!
- **Review concepts** ASAP after class, using the book and other resources to clarify any hazy areas. For the most enduring learning, try to find the answers to your questions yourself, or through active participation in a study group.
- **Come to office hours** (or make another time to see me) with any questions you are still unsure about, or just to talk about plants! Office hours are for you—so please don't be shy!
- **Read all course emails and announcements** on Blackboard. You are responsible for all information in them, as well as anything announced or posted in class.
- **Take care of yourself:** Eat well, drink water, sleep, exercise, go outside!
- **The prime directive** is for you to have a valuable experience and succeed! I am here to help you, and I am most happy to do so, but you must ask for that help and do your part, too.

### **Honor and conduct policies:**

As scholars, we hold ourselves to the highest standards of integrity. The FIU honor policy will apply fully to our work in this class. Any *cheating* on exams or *plagiarism* on written work will result in a grade of F for the assignment and, if warranted, the course. *Using more than one clicker* will result in temporary confiscation of both clickers, and permanent loss of clicker points for the owner and perpetrator. *Serious dishonor or cheating* will result in academic misconduct charges.

As a progressive learning community, we respect and protect the civil rights of everyone, regardless of gender, race, ethnicity, place of origin, or disability.

Academic misconduct definitions and procedures are detailed at:

<http://academic.fiu.edu/academicbudget/misconductweb/1acmisconductproc.htm>.

FIU's student code of conduct, and policies on discrimination and sexual harassment, are available at: <http://regulations.fiu.edu/regulation>.

Accommodations for disabilities are arranged through the Disability Resources Center.

See: <http://studentaffairs.fiu.edu/get-support/disability-resource-center/index.php>.

*This syllabus information, including course requirements and grading, may change at any time to better meet the needs of the group, or due to unforeseen circumstances.*

The most current version will be kept updated on Blackboard, so check there if in doubt.

*The schedule below, especially the amount of time devoted to each topic, may also change at any time.* Exam dates are meant to be firm, and would only change under the most pressing circumstances. See Blackboard for the most current version.

Week	Date	<b>Schedule: Topics and exams</b>	<b>Reading due (chapter) and assignments</b>
1	8 Jan 10 12	Course introduction; What is life? What is a plant? What is science?	Syllabus; 19.1-19.2; Essay 3.1 1; 22.1 1, Essay 12.1; Gillis (NYT) 2015
2	15 17 19	<b>Martin Luther King holiday—no class</b> What is science? <i>1) Service activity introduction</i> The plant cell	<i>[Tues Jan 16—last day to drop w/o cost]</i> 1 <i>[Weds Jan 17—last day to pay or get loan]</i>  5
3	22 24 26	Photosynthesis Genetic variation and evolution Genetic variation and evolution	6 17 17
4	29 31 2 Feb	Phylogeny and the tree of life Phylogeny and the tree of life How plants evolved: the green algae / The plant life cycle	18; What is phylogeny? / Genetic considerations (TOL 2007); What is cladistics? (Clos 1996) 20.2-20.3; Kingdom Chlorophyta (Cyr 2009) / 14
5	5 7 9	The plant life cycle <b>EXAM #1 on weeks 1-4 (through phylogeny)</b> Plant diversity: evolutionary trends / Ancestral plants: “Bryophytes”	14 <i>“Science, plant cells, and evolution”</i>  22 (up to p. 21); Adaptive features of plants (Cyr & Schaeffer 2009)
6	12 14 16	Got leaves? Lycophytes and Ferns Got leaves? Lycophytes and Ferns Got seeds? Gymnosperms	22.4 22.4 23
7	19 21 23	Got seeds? Gymnosperms Got flowers? Angiosperms Got flowers? Angiosperms <i>2) Outdoor plant safari assignment</i>	23 24.1-24.2 24.1-24.2
8	26 28 2 Mar	Evolution of the plant body, and the first trees <b>EXAM #2 on weeks 5-7</b> Plant growth, form, and function	22.3; Essay 22.1; Taggart 2003, O'Donoghue 2007, Meyer-Berthaud 2007 <i>“Plant life cycle and diversity”</i> 9
9	5 7 9	Stems and wood Stems and wood Roots and plant nutrients	10 10; Tabuchi (NYT) 2017 11; 21.3
	12-16	<b>Spring break—no class</b>	<i>[Mon Mar 19—last day to drop]</i>
10	19 21 23	Leaves Leaves Plant behavior and hormones	12 12; Moran 2006 13; Cossins 2014; <i>Plant safari due on Blackboard</i>

Week	Date	Schedule: Topics and exams	Reading due (chapter) and assignments
11	26 28 30	Sex, flowers, and pollination Fruits, seeds, and dispersal Guest lecture: Dr. Jason Downing, "Orchids"	24.1-24.3; 25.1-25.3 24.4-24.6; 25.4 Roberts 2008— <i>crucial!</i>
12	2 Apr 4 6	Plants & people: Food EXAM #3 on weeks 8-11 Plants & people: Food 3) Ecological footprint assignment	2; Essays 9.1, 11.1, & 14.1; Diamond 1994 "Plant form and function" 2; Essays 9.1, 11.1, & 14.1; Diamond 1994 TBA: extra credit tour of Gifford Arboretum!
13	9 11 13	Medicines and other products Sacred, magical, and monstrous plants Plant breeding and biotechnology	2.4; Essays 11.1, 13.1, & 28.1; Vietmeyer 2008 Walker 2009, Ligon 1997 16; Essay 15.2; Plumer 2013, Hakim (NYT) 2016
14	16 18 20	Plant ecology Movie: <i>The Queen of Trees</i> Plants, people, and sustainability + course evaluations (online)	26 Van Noort 2004 30; Ecological footprint and service activity report due in class & on Blackboard
Finals	Week of Apr 23	FINAL EXAM on weeks 12-14 "Plants & people" + cumulative: time TBA in OE 134	

Course readings and resources (all are available on Blackboard)

Clos, L. 1996. What is cladistics? <http://www.fossilnews.com/1996/cladistics.html>. Accessed 1/5/2014.

Cossins, D. 2014. Plant talk. *The Scientist* magazine 28(1): 37-43. <http://www.the-scientist.com/?articles.view/articleNo/38727/title/Plant-Talk/>. Accessed 1/10/2016.

Cyr, R. 2009. Kingdom Chlorophyta. *From Protists II - Kingdoms Stramenopila, Rhodophyta, and Chlorophyta*. Biology 110 website, Pennsylvania State University. <https://wikispaces.psu.edu/display/110Master/Protists+II+-+Kingdoms+Stramenopila%2C+Rhodophyta%2C+and+Chlorophyta>. Accessed 1/11/2015.

Cyr, R. and S. Schaeffer 2009. Adaptive features of plants. *From Plants I - Evolution and Diversity, and Non-Vascular Plants*. Biology 110 website, Pennsylvania State University. <https://wikispaces.psu.edu/display/110Master/Plants+I+-+Evolution+and+Diversity,+and+Non-Vascular+Plants>. Accessed 1/11/2015.

Diamond, J. 1994. Spacious skies and tilted axes. *Natural History* magazine 103(5): 16-23.

Gillis, J. 2015. Short answers to hard questions about climate change. *The New York Times*. Nov 28. <http://www.nytimes.com/interactive/2015/11/28/science/what-is-climate-change.html>. Accessed 1/8/2017.

- Hakim, D. 2016. Doubts about the promised bounty of genetically modified crops. *The New York Times*. Oct 29. <http://www.nytimes.com/2016/10/30/business/gmo-promise-falls-short.html>. Accessed 1/7/2017.
- Ligon, L. 1997. Seminole medicine, plants and religion. *Mother Earth Living*. <http://www.motherearthliving.com/Gardening/Seminole-medicine-plants-and-magic.aspx#axzz3OZkx7ZvV>. Accessed 1/11/2015.
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- Moran, J. (2006). Life and death in a pitcher. *Natural History* magazine, 115(8), Oct: 56-62.
- O'Donoghue, J. 2007. Primeval forest: the evolution of trees. *New Scientist* 196(2631): 38-41.
- Plumer, B. 2013. This terrifying chart shows we're not growing enough food to feed the world. *The Washington Post*. <http://www.washingtonpost.com/blogs/wonkblog/wp/2013/07/01/this-unsettling-chart-shows-were-not-growing-enough-food-to-feed-the-world/>. Accessed 1/7/2017.
- Roberts, D. and K. Dixon. 2008. Orchids. *Current Biology*, 18(8), R325-R329.
- Tabuchi, H., C. Rigby, and J. White. 2017. Amazon Deforestation, Once Tamed, Comes Roaring Back. *The New York Times*, Feb. 24. <https://www.nytimes.com/2017/02/24/business/energy-environment/deforestation-brazil-bolivia-south-america.html>.
- Taggart, R. 2003. The first vascular land plants. Michigan State University. <http://taggart.glg.msu.edu/isb200/fland.htm>. Accessed 1/11/2015.
- TOL (Tree of Life web project). Maddison, D. R. and K-S. Schulz (eds.) 2007. What is Phylogeny? / Genetic connections. The Tree of Life Web Project. Home page: <http://tolweb.org>. <http://tolweb.org/tree/learn/concepts/whatisphylogeny.html> and <http://tolweb.org/tree/learn/concepts/geneticconnections.html>. Accessed 1/5/2014.
- Van Noort, S. 2004. How fig trees are pollinated. *Veld and Flora* 90(1): 13-15. [http://www.figweb.org/references/pdf/veld\\_v90\\_n1\\_a11.pdf](http://www.figweb.org/references/pdf/veld_v90_n1_a11.pdf). Accessed 1/11/2015.
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- Walker, M. 2009. Sacred plants of the Maya forest. *BBC Earth News*. [http://news.bbc.co.uk/earth/hi/earth\\_news/newsid\\_8083000/8083812.stm](http://news.bbc.co.uk/earth/hi/earth_news/newsid_8083000/8083812.stm). Accessed 1/11/2015.