BIOL 300 – BOTANY

FALL, 2018
MWF 11:00 – 11:50 AM, 152 Rita Liddy Hollings Science Center (RITA)
M 1:00 – 5:00 281 RITA; meet at the Library parking lot for off-campus field trips

INSTRUCTOR:	Dr. Jean Everett
OFFICE:	215 RITA
OFFICE HOURS:	Fridays 12-2pm; I will be in my office at other times (especially many Wednesday afternoons) and you are welcome to stop in.
OFFICE PHONE:	843-953-7843
MAILBOX:	Biology Department Office, 255 RITA)
EMAIL:	everettj@cofc.edu (If I don't respond, please try again or phone me.)
WEBPAGE:	OAKS

REQUIRED TEXT:
Raven, Biology of Plants, 8th Edition. Evert, RF and Eichhorn, SE, W.H. Freeman & Co.

OPTIONAL TEXT:
Porcher, R.D. and D.A. Rayner. 2002. A Guide to the Wildflowers of South Carolina. University of South Carolina Press.

COURSE GOALS:
Students will:
- improve skills in critical thinking and logical reasoning
- gain an understanding of the importance of plants to all other forms of life on earth
- develop an understanding of the structure, function and diversity of the plant and fungi kingdoms
- develop a basic understanding of several local plant communities and the underlying ecosystem factors that control vegetation patterns

LEARNING OUTCOMES:
Students who successfully complete this course will demonstrate that they:
- have improved skills in critical, synthetic, scientific thinking and logical reasoning
- are able to successfully read, summarize and discuss scientific papers in the primary literature
- know how plants are structured and how they grow (both primary and secondary growth)
- understand photosynthesis and its importance as the source of energy for almost all other forms of life on the planet
- understand transpiration and its importance to both plant function and the global hydrological cycle
- understand plant nutrition and the sources of essential nutrients (primarily soils)
- have a basic understanding of soil characteristics (including the influence of geomorphology and topography) in determining plant species distributions
- understand the evolution of reproductive strategies and how these have changed since plants emerged
- have a basic understanding of secondary metabolites and how both internal and external cues regulate plant function
- have a basic understanding of fungi form, function and reproduction

GRADE:
Midterm Exams (3) = 30%
Comprehensive
Final Exam = 10%
Papers (3) = 30%
PowerPoint = 5%
Lab Reports = 10%
Lab Participation = 5%
Lab Final = 10%

GRADING SCALE				
	88-89% = B+	78-79% = C+	68-69%=D+	
93-100% = A	83-87% = B	73-77% = C	63-67%=D	
90-92% = A-	80-82% = B-	70-72% = C-	60-62%=D-	<60%=F

The midterm and final exams may include short answer, definitions, essay, matching, and multiple choice questions, and identifications of cell structures, tissues, organs, etc from PowerPoint slides, with emphasis on material covered in both lecture and lab. All electronic devices will be surrendered for the duration of each exam.

Papers will be short (5-7 pages) reviews of a topic of your choice related to botany. Each paper will be based on at least 10 modern primary literature sources; additional sources both primary and secondary are encouraged. Each paper must be checked with the plagiarism checker available on OAKS, and your similarity score must be addressed. Each paper will be an improvement over the previous based on a grading protocol posted on OAKS. The paper grades will thus be weighted at 5%, 10% and 15% for each successive paper.

The PowerPoint will be your class presentation of one component of the internal and external cues and chemicals that plants use to regulate growth and function. I'll have a Google sign-up sheet for the lectures as soon as drop/add is over.

Lab participation will include occasional quizzes conducted in the lab, contributions to class Google documents and overall participation in both the lab and in the field. Quizzes may include brief questions similar to the midterm and final exams, including questions that indicate that you are prepared for the day's lab.

Lab reports will include brief but complete written summaries of lab activities, worksheets and student presentations. These will include both inside labs and field labs. I will have worksheets for some labs, and these will form the basis of those lab reports. Lab reports will be due on the Friday after each Monday lab; worksheets and presentations will be due the day of lab. Some lab reports will be joint efforts, and each student will contribute.

The lab final may include short answer, definitions, essay, matching, and multiple choice questions, and identifications of cell structures, tissues, organs, etc from PowerPoint slides or live specimens, with the emphasis on material covered in lab. All electronic devices will be surrendered for the duration of each exam.

PLEASE NOTE: No makeups will be given for exams without prior notice and a documented absence memo from the Absence Memo Office at 67 George Street. In an emergency, contact me **as soon as possible** for makeup arrangements. Also, no student will be permitted to begin an exam if any student has already completed the exam. Lab quizzes and the lab final **CANNOT** be made up.

ATTENDANCE: Your final grade will be dropped by 5% if you miss more than 3 classes, and by 10% if you miss 5 or more classes. Tardiness will count as a partial absence. Missed labs will count as 4 absences. If you have a documented absence memo from the Absence Memo Office at 67 George Street, you will be excused from that absence.

ACADEMIC INTEGRITY: I expect each of you to work independently unless specifically instructed otherwise, and to adhere to the College of Charleston Honor System and all other policies described in the Student Handbook.

SPECIAL NEEDS: If you will need any special accommodations to complete the requirements for this course, please contact me as soon as possible.

ALLY PROGRAMS: I am a Safe Zone Ally and a Green Zone Ally, and happy to assist.

FOOD AND HOUSING INSECURITY: If you are not economically secure in food and/or housing, the College has assistance programs. You may contact the Dean of Students directly, or I will be most happy to confidentially facilitate assistance.

TENTATIVE LECTURE and LAB SCHEDULE

DATE		**TOPIC**	**CHAPTER**
22	Aug.	Introduction	1
24	Aug.	**HOW PLANTS ARE BUILT** – the anatomy of cells,	3, 22 – 26
27	Aug.	tissues, organs, organ systems and both 1^o & 2^o growth	
	Lab	Why plants? Discussion to explore the importance of green	1 + Lab Manuals
29	Aug.	More on anatomy and growth	
31	Aug.	More on anatomy and growth	
3	Sept.	More on anatomy and growth	
	Lab	Micro and macro observations on anatomy	
5	Sept.	**ENERGY** – how plants transform solar energy to chemical	5 & 7
7	Sept.	energy through photosynthesis, and why this is important	
10	Sept.	Energy, continued	
	Lab	Set up water experiments; C4 and CAM carbon capture	**Google + Worksheet**
12	Sept.	Energy, continued	
14	Sept	**EXAM 1**	
17	Sept.	**WATER** – how plants use, obtain and move water and…	4 & 30
	Lab	Water field trip – **Paper #1 DUE**	
19	Sept.	…why this is important	
21	Sept.	Water, continued	

DATE		**TOPIC**	**CHAPTER**
24	Sept.	**HOW PLANTS "EAT"** – plant nutrition and soils	29
	Lab	Soils and nutrition – experiment setup	**Google**
26	Sept.	Plant nutrition and soils, continued	
28	Sept.	Plant nutrition and soils, continued	
1	Oct.	Longleaf pine ecosystem lecture	
	Lab	Field trip to see longleaf pine ecosystems	
3	Oct.	**SEX&DIVERSITY** – evolution of reproductive strategies	12, **Worksheet**
5	Oct.	Bryophytes	16
8	Oct.	Seedless vascular plants	17
	Lab	Campus field trip in search of diversity	
10	Oct.	Review	
12	Oct.	**EXAM 2**	
15	Oct.	Gymnosperms – **Paper #2 DUE**	18
	Lab	Student presentations on ecological/economic value of plants	**Google Sign-up**
17	Oct.	Angiosperms	19 – 21
19	Oct.	Angiosperms, continued	
22	Oct.	Angiosperms, continued	
	Lab	Micro and macro observation of reproductive structures	**Google**
24	Oct.	Open right now…	
24	Oct.	**Last Day to Withdraw**	
26	Oct.	Final measurements of nutrition experiment – meet in 281	
29	Oct.	Rice – guest lecture by Dr. Richard Porcher	Porcher & Rayner,
	Lab	Field Trip to Caw Caw Interpretive Center	if you have it
31	Oct.	Review	
2	Nov.	**EXAM 3**	
5	Nov.	**FALL BREAK**	
7	Nov.	**PLANT REGULATION** – internal and external cues – Student presentations begin	2, 27&28 – **Google Sign-up**
9	Nov.	Student presentations on plant regulation	
12	Nov.	Beech ecosystem lecture	
	Lab	Field trip to beech ecosystem	
14	Nov.	Student presentations on plant regulation	
16	Nov.	Student presentations on plant regulation	
19	Nov.	Student presentations on plant regulation	
	Lab	Discussion of experimental results and lab critique	
21	Nov.	Thanksgiving Holiday	

23	Nov.	Thanksgiving Holiday	
DATE		**TOPIC**	**CHAPTER**
26	Nov.	**FUNGI** – just because! **Paper #3 DUE**	14
	Lab	Student Presentations of Cool Fungi Facts and Videos	**Google Sign-up**
28	Nov.	Fungi	
30	Nov.	Fungi	
3	Dec.	Review	
	Lab	**Lab Final**	
12	**Dec.**	**Comprehensive Final Exam – 8-11am**	

TENTATIVE LAB SCHEDULE

DATE		**LAB TOPIC**
27	Aug.	Plan labs based on student interests, within broad framework
3	Sept.	Micro and macro observations on anatomy – **Google**
10	Sept.	Set up water experiments; C4 and CAM carbon capture – **Google + Worksheet**
17	Sept.	Water field trip – **Paper #1 DUE in class or at the beginning of lab**
24	Sept.	Soils and nutrition – experiment setup – **Google**
1	Oct.	Field trip to see longleaf pine ecosystems
8	Oct.	Campus field trip in search of diversity
15	Oct.	Student presentations on ecological/economic value of plants – **Google sign-up**
22	Oct.	Micro and macro observation of reproductive structures – **Google**
29	Oct.	Field Trip to Caw Caw Interpretive Center
5	Nov.	**Fall Break**
12	Nov.	Field trip to beech ecosystem
19	Nov.	Discussion of experimental results and lab critique
26	Nov.	Student Presentations of Cool Fungi Facts and Videos – **Google sign-up**
3	Dec.	**Lab Final**

INDOOR LABS: Information about the labs will be presented at least one week before each lab. You are responsible for being fully prepared, and there may be quizzes.

FIELD TRIPS: We will have 3 off-campus field trips that will take us out in the woods, so dress to get wet, dirty, wet, buggy, wet, scratched, wet, muddy, wet, and wet. BE PREPARED! I strongly recommend that you wear long sleeves, long pants, and old shoes or rubber boots. **YOU MUST WEAR CLOSED SHOES** (no Teva's, Crocs or other sandals). If you do not wear closed shoes to field labs, you will be dismissed from that lab, as an unexcused absence. Consider a hat and/or sunscreen, and you may want bug spray (**no** bug spraying in the van!). You should bring plenty of water and perhaps a snack.

YOU MIGHT WANT TO INVEST IN A HEAD NET – THE MOSQUITOES ARE LIKELY TO BE FEROCIOUS!

Please note: You **must** wear your seatbelt at all times when riding in the van, and no one will sit in the back seat if there are free seats to the front. These are safety issues and non-negotiable. There will be **no** smoking and **no** cell phone or other electronic communication device use on our field trips. If you smoke, please do not smoke right before getting in the van. These restrictions are also non-negotiable.

If you are allergic to bee stings or other venoms, please let me know immediately. You must carry medication. If you are diabetic, please set up a buddy system with a classmate.

Some field trips may run late due to unpredictable traffic. Please schedule accordingly, and please let me know as soon as possible if late field trips are going to be a problem for you.