BIOL 301 – PLANT TAXONOMY – COVID 19 SEMESTER (revised 15 Feb. 2022)

SPRING, 2022

MWF 11:00 – 11:50 AM, 281 Rita Liddy Hollings Science Center (RITA) (this is also our lab room)

M 1:00 – 5:00 PM, 281 RITA – MEET AT THE LIBRARY PARKING LOT FOR FIELD TRIPS

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| INSTRUCTOR: | Dr. Jean Everett – pronouns she/her |
| OFFICE: | 215 RITA |
| OFFICE HOURS: | Fridays 12-1pm – in person after class; or by appointment – Zoom only |
| OFFICE PHONE: | 843-953-7843 – messages go to my email |
| MAILBOX: | Biology Department Office, 255 RITA |
| EMAIL: | everettj@cofc.edu (if I don’t respond, please try again or phone me) |
| WEBPAGE: | <http://everettj.people.cofc.edu/BIOL301.html> – PLUS OAKS |

REQUIRED TEXTS:

Judd, W.S., C.S. Campbell, E.A. Kellogg, P.F. Stevens and M.J. Donoghue. 2016. Plant

Systematics: A Phylogenetic Approach, 4th Ed. Sinauer Associates.

Radford, A., H. Ahles, and C.R. Bell. 1968. Manual of the Vascular Flora of the Carolinas.

University of North Carolina Press, Chapel Hill.

HIGHLY RECOMMENDED TEXTS:

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

of South Carolina Press.

Harris, J.G. and M.W. Harris. 2001. Plant Identification Terminology, An Illustrated Glossary, 2nd Ed. Spring Lake Publishing.

COURSE GOALS:

Students will:

* improve skills in critical, synthetic thinking and logical reasoning
* develop the ability to identify plants using a variety of mechanisms
* develop an integrated understanding of local vegetation patterns 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 scientific papers and successfully write a topical review paper
* know the identifying characteristics of the most important plant families; regionally and globally
* know the vegetative and floral characteristics that enable identification of plants using a dichotomous key
* are comfortable using dichotomous keys
* are able to sight identify approximately 150 plant species that are linked to different local ecosystems and have the ability to separate indicator species from generalist species
* understand how ecological relationships contribute to plant species distributions in the region
* recognize the major plant communities found in this region
* understand basic soil characteristics as they influence plant species distributions
* understand the local geomorphological patterns that control surface soil and hydrological characteristics
* are able to integrate information on geomorphology, soils and hydrological patterns to predict and understand local plant communities

GRADE:

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| 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 |

Midterm Exams (3) = 30%

Comprehensive

Final Exam = 10%

Flip Participation = 5%

Paper = 15%

Lab Quizzes = 25%

Lab Keying = 5%

Lab Final = 10%

The midterm and final exams will include technical definitions by term and from images, family identifications from written descriptions and images, and short answer questions about material covered in both lecture and lab. All electronic devices will be surrendered for the duration of each exam.

Flip Participation involves your preparation and contributions to the reverse lectures, where you will learn the material on some families on your own, filling out the worksheets linked on our “people” page. We will then discuss the families and any questions in class, and review images. See families marked with an \* on the schedule for reverse lecture preparation. PLEASE BE PREPARED ON ALL REVERSE LECTURE DAYS! MARK YOUR CALENDARS!

The paper will be 5-7 pages (not including Literature Citation section), double spaced, typed in a readable font (eg: Times New Roman 12, Arial 10) on any topic of your choice that is related to this course. You must cite at least 15 modern primary literature papers. Use Web of Science in the library database section of MyCharleston to search for primary literature papers. Use the librarians for help researching your topic. Please use standard scientific citation format (though not numbered, please). You must also submit your paper to a plagiarism checking site through OAKS, and submit the results along with your paper. You must explain your similarity score. See schedule for one-page outline and paper due dates. THE PAPER WILL BE DUE IN MARCH SO I HAVE ENOUGH TIME TO GRADE IT – SEE THE SCHEDULE.

Field trips are a huge component of this class. We cannot viably use the vans for transport because of the pandemic. Instead, you will have to have a personal vehicle for traveling to field trip sites. Carpooling is acceptable based on personal decisions. I’d like for us to be in the smallest possible number of vehicles. Waivers will be required.

Lab quizzes will be conducted both in the field and in the lab. Each quiz will include 10 specimens to be identified by family, genus and species. SPELLING COUNTS. Quiz dates are listed on the lab schedule. I will drop your lowest quiz score, if it is not a zero from an unexcused absence. If I have credible evidence that you have cheated on a quiz, your score for that quiz will be zero. I will have an illustrated list of our field trip species on the “people” website by the Tuesday after the Monday field trips.

Lab keying exercises will be conducted as listed on the lab syllabus. Each of you will independently key 3 to 5 fresh specimens to family, genus and species. Be certain to bring your *Manual to the Vascular Flora of the Carolinas* to each keying exercise. Mark your calendars!

The lab final will be conducted in the lab, and will include 100 specimens (fresh or photographed) to be identified by family, genus and species. Students with a perfect quiz average, including any extra credit, may be exempted from the lab final.

PLEASE NOTE: No makeups will be given for exams without prior notice and a documented absence excuse. 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. Excessive tardiness (5 minutes) will count as an absence. You will be excused from an absence only if you explain it to me; personal health details are NOT required. My policy is that if you are too sick to come to class, you are sick enough to see a doctor. I will trust your honesty – but see next point and see Covid notes.

ACADEMIC INTEGRITY: I expect each of you to work independently unless specifically instructed otherwise, and to adhere to the College of Charleston Honor System as 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 housing, the College has assistance programs. You may contact the Dean of Students directly, or I will be most happy to confidentially facilitate assistance.

STUDENT WELL BEING: We are well aware of the additional personal challenges many of you face, and we have resources in place to help. You may contact the Dean of Students directly, or I will be most happy to confidentially facilitate assistance.

COVID 19: This will be another challenging semester for all of us. If you must quarantine/isolate, <https://www.cdc.gov/coronavirus/2019-ncov/downloads/COVID-19-Quarantine-vs-Isolation.pdf>, please let me know as soon as possible so I can set up Zoom for you. Please be super-careful because labs are such an important part of this class. You are required to wear a mask while indoors, regardless of vaccination status. A shocking percentage of our students are not vaccinated. If you are not, I strongly encourage you to get vaccinated and boosted – the vaccine is free, safe, effective and readily available. I will wear a mask and stay distanced. PLEASE DO NOT APPROACH ME CLOSER THAN 10’. I know this is going to be hard, especially in lab, but I’m medically vulnerable, as are members of my family. If you need a more private conversation, please work with me to set up a Zoom meeting. If you begin to feel overwhelmed, I am happy to talk to you and urge you to seek counseling if needed. Please contact me if you don’t feel I’m meeting your needs.

TENTATIVE LECTURE and LAB SCHEDULE

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| --- | --- | --- | --- |
|  | | All handouts on web. An \* indicates a reverse lecture. |  |
|  | |  |  |
| DATE | | TOPIC | CHAPTER |
|  | |  |  |
| 10 | Jan. | Introduction | 1, App. 2 |
|  | Lab | How to really look at plants | 4, handouts |
| 12 | Jan. | Classification and nomenclature | 3, 5, App. 1 |
| 14 | Jan. | Ecological factors that influence plant species distributions | handouts |
|  |  |  |  |
| 17 | Jan. | MLK Holiday – no class |  |
|  | Lab | MLK Holiday – no lab |  |
| 18 | Jan. | Last day to drop/add |  |
| 19 | Jan. | Geomorphology | handout |
| 21 | Jan. | Geomorphology, continued |  |
|  |  |  |  |
| 24 | Jan. | Introduction to phylogeny + seedless vascular plants | 2, 6 |
|  | Lab | Field trip to Stono Preserve to learn generalists vs. indicator |  |
| 26 | Jan. | Intro to families; *Lycopodicaceae*, Ferns, *Equisetaceae* | 5-7 |
| 28 | Jan. | Phylogeny of extant gymnosperms | 6 |
|  |  |  |  |
| 31 | Jan. | Maritime ecosystems | P&R |
| Lab | | Field trip to Maritime Systems at Seabrook Island? |  |
| 2 | Feb. | Review |  |
| 4 | Feb. | EXAM 1 |  |
| NOTE: For all angiosperm families, read the introduction to Chapter 8, the information on each relevant clade, class, subclass, and order, and then the information on each listed family. Use the Table of Contents or the quick reference guide inside the front cover to find page numbers. Be sure to note updates from the 3rd edition – these may not be reflected on my PowerPoint slides (work in progress) – use the 4th edition material! | | | |
| 7 | Feb. | *Pinaceae*, *Cupressaceae*; | 7 |
| Lab | | Field trip to Sewee Shell Mounds | P&R |
| 9 | Feb. | Phylogeny of extant angiosperms | 6 |
| 11 | Feb. | Intro to angiosperms and floral formulas | 8 |
|  |  |  |  |
| 14 | Feb. | *Magnoliaceae*, *Ranunculaceae*, \**Caryophyllaceae* | See note, above |
| Lab | | Learning how to key – keying exercise |  |
| 16 | Feb. | *Cactaceae*, *Euphorbiaceae*, \**Hypericaceae* |  |
| 18 | Feb. | The Sonoran Desert |  |
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|  | |  |  |
| DATE | | TOPIC | CHAPTER |
|  |  |  |  |
| 21 | Feb. | Longleaf Pine Ecosystems | P&R |
| Lab | | Field trip to longleaf pine and pocosin ecosystems | P&R |
| 23 | Feb. | *Fabaceae* |  |
| 25 | Feb. | *Rosaceae* |  |
|  |  |  |  |
| 28 | Feb. | *\*Ulmaceae*, \**Cucurbitaceae* – OUTLINES DUE sometime this week | |
| Lab | | Keying exercise |  |
| 2 | Mar. | Review |  |
| 4 | Mar. | EXAM 2 |  |
|  |  |  |  |
| 7-11 | Mar. | Spring Break |  |
|  |  |  |  |
| 14 | Mar. | Feeding habits and pollination mechanisms of carnivorous plants (*Sarraceniaceae*, *Lentibulariaceae*, *Droseraceae*) | P&R |
| Lab | | Field trip to swamp forest | P&R |
| 16 | Mar. | *\*Fagaceae*, \**Betulaceae*, \**Juglandaceae* |  |
| 18 | Mar. | Invasive Species and Native Alternatives in Landscaping |  |
|  |  |  |  |
| 21 | Mar. | Richard Porcher on Rice??? | P&R |
| Lab | | Field trip to Caw Caw Nature & History Interpretive Center |  |
| 23 | Mar. | *\*Onagraceae*, \**Brassicaceae*, \**Malvaceae* |  |
| 25 | Mar. | *Ericaceae*, \**Solanaceae* – Last Day to Withdraw |  |
|  |  |  |  |
| 28 | Mar. | *Lamiaceae*, *\*Scrophulariaceae* – PAPERS DUE |  |
| Lab | | Field trip to longleaf pine and pond ecosystems | P&R |
| 30 | Mar. | Review |  |
| 1 | April | EXAM 3 |  |
|  |  |  |  |
| 4 | April | Beech Ecosystems | P&R |
| Lab | | Field trip to beech ecosystems | P&R, Handout |
| 6 | April | *Apocynaceae*, \**Apiaceae* |  |
| 8 | April | *Asteraceae* |  |
|  |  |  |  |
| 11 | April | Phylogeny of extant monocots | 6 |
| Lab | | Keying Exercise |  |
| 13 | April | Introduction to Liliopsida; \**Liliaceae*, \**Iridaceae* |  |
| 15 | April | *\*Arecaceae,* \**Araceae*, \**Lemnaceae* |  |
|  |  |  |  |
| 18 | April | *Poaceae*, *\*Cyperacaeae*, *\*Juncaceae* |  |
| Lab | | Field Review |  |
| 20 | April | *Orchidaceae* |  |
| 22 | April | Review and Ecotour |  |
|  |  |  |  |
| 25 | April | Review and Mandatory in-class evaluations |  |
|  | Lab | Final Lab Exam (~1:00 – 5:00 pm) |  |
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| 27 | April | COMPREHENSIVE FINAL EXAM, 1-3 PM |  |
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TENTATIVE LAB SCHEDULE

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| DATE | | LAB TOPIC |
|  |  |  |
| 10 | Jan. | How to Really Look at Plants |
| 17 | Jan. | MLK Holiday |
| 24 | Jan. | Field trip to Stono Preserve – generalists vs. indicator species |
| 31 | Jan. | Field trip to maritime ecosystems at Seabrook Field Quiz |
| 7 | Feb. | Field trip to Sewee Shell Mounds Field Quiz |
| 14 | Feb | Learning how to key – keying exercise Lab Quiz |
| 21 | Feb. | Field trip to longleaf pine and pocosin ecosystems Field Quiz |
| 28 | Feb. | Keying exercise Lab Quiz |
| 7 | March | Spring Break |
| 14 | March | Field trip to swamp forest ecosystems Field Quiz |
| 21 | March | Field trip to Caw Caw Interpretive Center Field Quiz |
| 28 | March | Field trip to longleaf pine and pond ecosystems Field Quiz |
| 4 | April | Field trip to beech woods Field Quiz |
| 11 | April | Keying exercise Lab Quiz |
| 18 | April | Field Review Field Quiz |
| 25 | April | Final Lab Exam (~1:00 – 5:00 pm) |

INDOOR LABS: Be sure to bring your Manual to all the keying exercises. You may also want to bring your lecture text on those days. If the weather looks bad on a field trip day, bring your Manual, as we may work indoors and reschedule the field trip.

FIELD TRIPS: Dress to get wet, dirty, wet, buggy, wet, scratched, wet, muddy, wet, 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 near the group!). You should bring plenty of water and perhaps a snack. You might want to consider a head net for gnats and mosquitoes.

Have some way to record information on the species and communities that we learn (clipboard, notebook, cards, tape recorder, camera…). I will permit you to collect a small sample of most of the species we cover. You can bring clippers and a notebook or magazine to press these specimens in the field. You can also label samples with a marking pen or masking tape, keep them fresh in a plastic bag, and press them later. Most plant parts will dry within a week if pressed between several sheets of newsprint, held down with a stack of heavy books or some such. See Appendix 2 in your text for more information.

You will find complete species descriptions in the Manual to the Vascular Flora of the Carolinas, and a lot of ecosystem information in Porcher and Rayner, thus my strong recommendation that you buy this book.

I will post our species lists on the web site, including a list linking images, generally by late Monday evening or early Tuesday morning after each field trip.

Please note: You must wear your seatbelt at all times on field trips. This is a safety issue and non-negotiable. There will be no smoking and no cell phone or other electronic device use (other than imaging) on our field trips. If you smoke, please do not smoke right before arriving at a field trip site. 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 or have other health issues, 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.