BIOL 300 – BOTANY

FALL, 2017
MWF 9:30 – 10:20 AM, 207 Harborwalk West
M 1:30 – 5:30 207 Harborwalk West; MEET AT 1PM AT THE LIBRARY PARKING LOT FOR FIELD TRIPS

INSTRUCTOR: Dr. Jean Everett
TEMP OFFICE: 303 Harborwalk East
OFFICE HOURS: Friday, 11:30AM and later by appointment. Other days by appointment. I will be in my office at other times, and you are welcome to stop in or call.
OFFICE PHONE: 843-953-7843
MAILBOX: Biology Department Temp Office, 231 New Science Center (SSMB)
EMAIL: everettj@cofc.edu (If I don’t respond, please try again or phone me.)
WEBPAGE: http://everettj.people.cofc.edu/BIOL300.html - note this is NOT OAKS

REQUIRED TEXT:

OPTIONAL TEXT:

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
• 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)
• know how plants are structured and how they grow (both primary and secondary growth)
• 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 soil characteristics (including the influence of geomorphology and topography) in determining plant species distributions
GRADE:
Midterm Exams (3) = 30%
Comprehensive
  Final Exam = 10%
Flip Participation = 15%
Paper Puzzles = 10%
PowerPoint = 10%
Lab Reports = 10%
Lab Participation = 5%
Lab Final = 10%

<table>
<thead>
<tr>
<th>GRADING SCALE</th>
<th>88-89% = B+</th>
<th>78-79% = C+</th>
<th>68-69% = D+</th>
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<tbody>
<tr>
<td>93-100% = A</td>
<td>83-87% = B</td>
<td>73-77% = C</td>
<td>63-67% = D</td>
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<td>90-92% = A-</td>
<td>80-82% = B-</td>
<td>70-72% = C-</td>
<td>60-62% = D-</td>
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<td>&lt;60% = F</td>
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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.

Flip Participation involves your preparation and contributions to reverse lectures, where you will learn material on your own, and work in teams to discuss and then present that material. See lectures marked with an * on the schedule for reverse lecture and lab preparation.

Paper Puzzles are individual and team exercises in reading and discussing the primary literature. These are also marked with an * on the schedule. I’ll have a separate handout on Paper Puzzles soon.

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. We’ll discuss this more soon, and I’ll have a sign-up sheet for the lectures as soon as drop/add is over. These presentations are also marked with an * on the schedule.

Lab participation will include quizzes conducted in the lab, 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 be brief but complete written summaries of lab activities. 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.

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.

### TENTATIVE LECTURE and LAB SCHEDULE

<table>
<thead>
<tr>
<th>DATE</th>
<th>TOPIC</th>
<th>CHAPTER</th>
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<tbody>
<tr>
<td>23</td>
<td>Introduction</td>
<td>1</td>
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<tr>
<td>25</td>
<td>Why plants? Discussion to explore the importance of green</td>
<td>1 + Lab Manuals</td>
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<td>28</td>
<td>Ecosystem Lecture – Longleaf Pine Last Day to Drop/Add</td>
<td>Porcher &amp; Rayner,</td>
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<td>Lab Field Trip to Longleaf Pine Ecosystems</td>
<td>if you have it; 31 &amp; 32</td>
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<tr>
<td>30</td>
<td>ENERGY – how plants transform solar energy to chemical</td>
<td>5 &amp; 7</td>
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<tr>
<td>1</td>
<td>energy through photosynthesis, and why this is important</td>
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<tr>
<td>4</td>
<td>Energy, continued</td>
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<tr>
<td></td>
<td>Lab Something to do with photosynthesis – experiment setup</td>
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<td>6</td>
<td>Energy, continued</td>
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<td>8</td>
<td>*Energy – C4 and CAM carbon capture – reverse lecture</td>
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<td>11</td>
<td>WATER – how plants use, obtain and move water and…</td>
<td>4 &amp; 30</td>
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<td></td>
<td>Lab Something to do with water – experiment or field trip?</td>
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<tr>
<td>13</td>
<td>…why this is important</td>
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<td>15</td>
<td>Water, continued</td>
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<td>18</td>
<td>Water, continued</td>
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<td></td>
<td>Lab *Paper Puzzle on Energy or Water</td>
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<tr>
<td>20</td>
<td>EXAM 1</td>
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<tr>
<td>22</td>
<td>HOW PLANTS “EAT” – plant nutrition and soils</td>
<td>29</td>
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<td>DATE</td>
<td>TOPIC</td>
<td>CHAPTER</td>
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<tr>
<td>25 Sept.</td>
<td>Plant nutrition and soils, continued</td>
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<td></td>
<td>Lab Something to do with soils and nutrition – experiment setup</td>
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<tr>
<td>27 Sept.</td>
<td>Plant nutrition and soils, continued</td>
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<td>29 Sept.</td>
<td><strong>HOW PLANTS ARE BUILT</strong> – the anatomy of cells,</td>
<td>3, 22 – 26</td>
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<td>2 Oct.</td>
<td>tissues, organs, organ systems and both 1° &amp; 2° growth</td>
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<td></td>
<td>Lab Something to do with anatomy</td>
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<td>4 Oct.</td>
<td>More on anatomy</td>
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<tr>
<td>6 Oct.</td>
<td>More on growth</td>
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<tr>
<td>9 Oct.</td>
<td><strong>SEX &amp; DIVERSITY</strong> – evolution of reproductive strategies</td>
<td>12</td>
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<td>Lab Something to do with a treasure hunt / fruits and flowers</td>
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<tr>
<td>11 Oct.</td>
<td>Bryophytes</td>
<td>16</td>
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<td>13 Oct.</td>
<td><strong>EXAM 2</strong></td>
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<td>16 Oct.</td>
<td><strong>Fall Break</strong></td>
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<tr>
<td>18 Oct.</td>
<td>Seedless vascular plants</td>
<td>17</td>
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<td>20 Oct.</td>
<td>Gymnosperms</td>
<td>18</td>
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<td>23 Oct.</td>
<td>Angiosperms</td>
<td>19 – 21</td>
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<td>Lab *Paper Puzzle on Ecological &amp; Economic Value of Plants</td>
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<td>25 Oct.</td>
<td>Angiosperms, continued</td>
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<tr>
<td>26 Oct.</td>
<td><strong>Last Day to Withdraw</strong></td>
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<td>27 Oct.</td>
<td>Angiosperms, continued</td>
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<tr>
<td>30 Oct.</td>
<td>Rice – guest lecture by Dr. Richard Porcher</td>
<td>Porcher &amp; Rayner, if you have it</td>
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<td>Lab Field Trip to Caw Caw Interpretive Center</td>
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<tr>
<td>1 Nov.</td>
<td><strong>PLANT REGULATION</strong> – internal and external cues</td>
<td>2, 27 &amp; 28</td>
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<td>3 Nov.</td>
<td><strong>EXAM 3</strong></td>
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<tr>
<td>6 Nov.</td>
<td>*Student Presentations on Plant Regulation</td>
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<td></td>
<td>Lab Something to do with regulation – experiment setup</td>
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<td>8 Nov.</td>
<td>*Student Presentations on Plant Regulation</td>
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<td>10 Nov.</td>
<td>*Student Presentations on Plant Regulation</td>
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<td>13 Nov.</td>
<td>*Student Presentations on Plant Regulation</td>
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<td></td>
<td>Lab *Discussion of experimental results</td>
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<td>15 Nov.</td>
<td>*Student Presentations on Plant Regulation</td>
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<tr>
<td>17 Nov.</td>
<td>*Student Presentations on Plant Regulation</td>
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<tr>
<td>20 Nov.</td>
<td>*Student Presentations on Plant Regulation</td>
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<tr>
<td></td>
<td>Lab *Paper Puzzle on Plant Regulation</td>
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<tr>
<td>22 Nov.</td>
<td>Thanksgiving Holiday</td>
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<tr>
<td>24 Nov.</td>
<td>Thanksgiving Holiday</td>
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</tbody>
</table>
**DATE** | **TOPIC** | **CHAPTER**
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27 Nov. | **FUNGII – just because!**<br> Lab | 14<br> *Student Presentations of Cool Fungi Facts and Videos*
29 Nov. | Fungi | |
1 Dec. | Fungi | |
4 Dec. | Review<br> Lab | **Lab Final**
13 Dec. | **Comprehensive Final Exam – 12-3pm** | |

**TENTATIVE LAB SCHEDULE**

**DATE** | **LAB TOPIC**
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28 Aug. | Field Trip to Longleaf Pine Ecosystems
4 Sept. | Photosynthesis
11 Sept. | Water
18 Sept. | *Paper Puzzle on Energy or Water*
25 Sept. | Soils and Nutrition
2 Oct. | Anatomy
9 Oct. | Anatomy
16 Oct. | **Fall Break**
30 Oct. | Field Trip to Caw Caw Interpretive Center
6 Nov. | Regulation
13 Nov. | *Discussion of experimental results*
20 Nov. | *Paper Puzzle on Plant Regulation*
27 Nov. | *Student Presentations of Cool Fungi Facts and Videos*
4 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 only have 2 or 3 field trips, but 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.
SAFETY POLICY AND PROCEDURES

The School of Sciences and Mathematics of the College of Charleston understands that the safety of our students, staff and faculty is of paramount importance. Engendering a safety culture is an important part of our mission in teaching and doing science. Each department, course of instruction, or research lab may require higher standards or procedures. The policies and procedures set forth below are understood to be minimum requirements across our departments.

In this document, the term "laboratory" is meant for a work space/facility where chemicals, biological agents, or equipment is used for research and/or instruction; this includes outdoor field trips.

No one (student, staff, faculty, or visitor) will be allowed in a laboratory (teaching or research) to perform experiments or where experiments may be in progress unless these regulations are followed.

Students dismissed from a teaching lab due to violations of the safety procedures will not be allowed to re-enter the laboratory until authorized to do so by their supervisor (instructor) and, in the case of research laboratories, by the department chair or designee. Any course work missed because of a violation of these guidelines cannot be made up at another time (or by an extension of the lab period) and will be treated as an unexcused absence.

1. You are responsible for knowing the biological, chemical, electrical, ergonomic, mechanical, and physical hazards associated with the equipment and materials that are being utilized in the laboratory. Listen to all instructions and ask questions about that which you do not understand.

2. Know the location of safety equipment: telephones, emergency shower, eyewash, fire extinguisher, fire alarm pull.

3. Know the appropriate emergency response procedures. If there is an injury or emergency, call 953-5611.

4. Do not work alone in the laboratory if you are working with hazardous materials or equipment.

5. Use hazardous chemicals, equipment, and biological agents only as directed and for their intended purpose.

6. Do not engage in horseplay, pranks or other acts of mischief while in lab.

7. Drinking, eating, and application of cosmetics is forbidden in laboratories where chemicals or biohazards are present. Smoking is forbidden in all College buildings.

8. Appropriate personal protective equipment shall be worn. The dress code for laboratory work when using chemicals, biological or physical hazards, or when instructed to do so by the laboratory supervisor is as follows:
   a) Wear safety glasses or goggles at all times.
   b) No exposed skin on arms, legs or torso.
   c) Wear lab coats or other approved protective garments.
   d) Wear gloves or other personal protective equipment (PPE) as directed by the instructor or mandated by prudent practices based on the chemicals being handled. If in doubt, wear appropriate gloves. Latex is not permitted. Avoid cross-contamination.
   e) Remove PPE (gloves and lab coat) when exiting the laboratory.
   f) Wash your hands, even if gloves were used, before leaving a lab where you did any lab work.
g) Closed toe shoes are required. The heel and top of foot must be covered. High heeled shoes, sandals, and perforated shoes are not permitted.

h) Confin e long hair and loose clothing.

9. Inspect equipment or apparatus for damage before adding chemical reagents or biological samples or energizing electrical equipment. Do not use damaged equipment.

10. Never remove chemicals, biological samples, or laboratory equipment from a lab without proper authorization.

11. Presume that all chemicals and biological samples used in the laboratory are hazardous for you and the environment, unless instructed otherwise.

12. Never leave an experiment unattended unless proper safety precautions are in place.

13. Read all labels on chemicals twice before using them in the lab. Read all instructions twice for the operation of any equipment or machinery.

14. Properly and safely dispose of all waste materials.

15. Treat sharps and broken glassware containers carefully.
   a) Broken glass should be disposed of in properly marked safety containers. All sharps (needles, razor blades, etc.) used for any purpose must be disposed of in specially labeled SHARPS containers.
   b) Do not place contaminated glass in the broken glassware container. Consult your supervisor.
   c) Waste chemicals and contaminated PPE should be discarded as directed.

16. When using a reagent, replace the lid immediately. Never return unused reagents to stock bottles. Take only the amount needed for your experiment.

17. All chemicals and biological samples/media are to be disposed of in appropriately labeled containers. Specific instructions for each material will be provided. Pay attention to waste container labels before adding the material to be discarded.

18. Use good personal hygiene. Keep your hands and face clean. Wash hands thoroughly with soap and water after handling any chemical or biological agent.

19. Keep the work area clean and uncluttered with chemicals and equipment. Clean up the work area on completion of an operation or an experiment. Before leaving the laboratory, you are responsible for making sure your lab area is clean and organized.

20. Never store a chemical or biological specimen in an unlabeled container.

20. Always have your College of Charleston identification and insurance information with you when working in a laboratory. MedicAlert identification must be worn if you have any potential life-threatening chemical sensitivities or medical conditions.

21. Report any accident or injury, however minor, to your teaching assistant, instructor, or lab supervisor immediately. An accident report form must be completed and forwarded to the department chair, dean, and to the Director of Environmental Health and Safety.

If you have questions/concerns about safety in the lab please first consult your instructor. If these are not answered, please see the department chair. Finally, you may consult the director of Environmental Health and Safety, Randy Beaver at 3-6802 or beaverr@cofc.edu

Adopted: March 7, 2012
CougarAlert

The College of Charleston has an agreement with the Blackboard Connect Inc. (formerly The NTI Group, Inc. (NTI)) to use its Connect-ED communication software to provide an emergency notification system that is capable of reaching students, faculty, staff and parents within minutes of a campus crisis. This system is called CougarAlert.

Information for Students

The CougarAlert emergency notification system will contact up to six phone numbers for the student. Students may include family member numbers in their address and phone number information.

All students should log onto MyCharleston to review their address and telephone information and update as needed.
To access the address and telephone information, follow these steps:
1. Log on to MyCharleston
2. Click on the Academic Services tab
3. Click on the Banner Self-Service link in the third column
4. Click on the Personal Information link
5. Click on the Update Address and Phones and Cougar Alert link

The CougarAlert system will pull the phone number in the following order—cell phone with text messaging option, cell phone without text messaging option, residence hall room phone number, mailing phone number, home phone number, parent phone number and parent 2 phone number.

If you do not have one of these numbers in your student record, the system will select the next number on the list.
To avoid issues related to timely communication of emergency messages to the proper places, every student must update his or her contact information in MyCharleston with current accurate information.

CougarAlert Display Information

When you receive an emergency message from the College of Charleston’s CougarAlert System, the return e-mail address will be displayed as cougaralert@cofc.edu, and Caller ID will be displayed as 843.725.7246 (this is the College’s Emergency Information Hotline).

Testing and Implementation

Testing will be conducted each semester to verify all systems are operating properly. The campus community will be notified via e-mail and web page postings when testing of the system will be conducted.

Blackboard Connect Software

Blackboard Connect is an emergency communication software that sends notification before, during and after an emergency. With this new system, the College will be able to communicate in many modes, including voice messages to home, work and cell phones; text messages to cell phones. PDAs and other devices; written messages to email accounts; and messages to teletypewriters and telecommunication devices (TTY/TDD) for the hearing impaired. In combination with our existing communications methods and emergency response plans, this new notification system will significantly enhance the College of Charleston’s ability to maintain a learning environment in which students are safe, secure and comfortable.

In an emergency, communications to the campus will be issued in the following priority order:
1. Message to the Blackboard Connect Emergency Notification System (phone and email).
2. Recorded message to the College’s Emergency Information Hotline, 843.725.7246.
3. Update to the Website.
4. Printed update sheets to be distributed and posted on campus (if necessary).

The CougarAlert system will only be used to notify you in the event of a campus crisis or emergency.
BIOL 300 – STUDENT INFORMATION – FALL 2017

NAME ______________________________________ Preferred name ______________________________________

Cell or other local phone ______________________________________

Email address if different from College account: ______________________________________

What is your main area of interest in biology? What are your other favorite subjects? What are your career goals?

Why are you taking this course? What areas of the course do you think you will find most interesting? Least interesting?

What do you want to learn from this course?

Do you have a hobby or special expertise that relates to this course?

How many semesters of college have you completed?

What were your grades in BIOL 111, 112 and 211? Which professors did you have? Do you think that 211 prepared you better than just 111 and 112 for your upper division courses?

Is there anything you’d like to know about me or my background?

Any other questions?

Any personal information collected in this course will be used for class management purposes only, and will not be released for any commercial purposes.