I. Course Description
Plants account for 98% of all biomass on earth! How did plants take over the world? Why do we care? How do botanists figure this stuff out? In this course, students will uncover answers to these and many other questions concerning plant biology. Topics include classification and evolution of the plant kingdom: plant anatomy, physiology and reproduction, with emphasis on the flower plants. Consideration given to experimental methods used in studying plants and the importance of plants and plant studies. Students are expected to complete an experimental project or observational study. Lecture, discussion, laboratory and field trips, or audio tutorial integration of these are presented.

II. Course Objectives
To demonstrate that botany is an exciting intellectual pursuit of fundamental importance to well-educated individuals; to demonstrate that plants have direct, daily consequences in our lives; and to place botanical knowledge in an appropriate scientific and intellectual framework. Students will gain an understanding of the basic concepts and skills necessary to succeed in upper division courses and become an active member of the scientific community. They will learn to express their understanding of biological principles and processes clearly in written and verbal form and will begin to understand the process of accessing, reading, and understanding information provided in biological literature. Students should be able to perform experiments with understanding, record data accurately, and communicate results clearly. Finally, students will also be exposed to the botanical research centers located here in New York.

III. Required Text(s):
2. In addition, you will need a field journal/scientific notebook. This can just be a basic spiral notebook, but it should have a plastic or hard cover. And you will need pencils! You will be drawing many plant structures in labs.

IV. Instructional Methods/Materials/Student Activities
Students are expected to read all assigned readings (textbook, lab book, and any additional materials) and watch any assigned videos before each class meeting. Assigned readings and videos are essential for complete participation during in-class activities and understanding of the material. Students can then use what is presented in lecture or lab along with the assigned readings as guides in the examination of the material.

V. Evaluation and Grading
Students’ success in this class will be monitored by administering lecture exams and quizzes, homework, in-class discussions and activities, written assignments, laboratory reports and presentations. Exams will be designed to test general knowledge of content covered in lecture and laboratory activities, readings, etc. Tests are cumulative, building from material covered in previous lectures and labs. Quizzes test comprehension of assigned readings, videos, etc.

Students found cheating will receive an F for the course, be placed on disciplinary probation, and/or be expelled
from the College. Turning in assignments that are not written in your own words qualifies as cheating. Please note, this does not mean you cannot work with other students when completing assignments. I encourage you to work together and discuss the questions together. However, your answers should be unique from each other and express your own thoughts. If they do not, penalties can range from sharing the credit with the person or people involved to losing all the points for the semester.

**Evaluation specifics:** Lab and Lecture content are meant to compliment and reinforce each other. Lecture exams may contain references to lab content and lab components will require mastery of lecture material. On average, you must earn at least a D on the Exams and a D on the Lab Exercises in order to pass the course.

Your final grade will be based on the following:

<table>
<thead>
<tr>
<th>Grading Scale</th>
<th>A: 93-100%</th>
<th>A-: 90-92%</th>
<th>B+: 87-89%</th>
<th>B: 83-86%</th>
<th>B-: 80-82%</th>
<th>C+: 77-79%</th>
<th>C: 73-76%</th>
<th>C-: 70-72%</th>
<th>D: 60-69%</th>
<th>F: &lt;60%</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 Lecture exams (100 pts. each)</td>
<td>400 points</td>
</tr>
<tr>
<td>5 Pop quizzes (5 pts. each)</td>
<td>25 points</td>
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<tr>
<td>5 Literature discussions (5 pts. each)</td>
<td>25 points</td>
</tr>
<tr>
<td>5 Individual assignment (5 pts. each)</td>
<td>25 points</td>
</tr>
<tr>
<td>1 Research project (100 pts. each)</td>
<td>100 points</td>
</tr>
<tr>
<td>2 Peer reviews (10 pts. each)</td>
<td>20 points</td>
</tr>
<tr>
<td>11 Lab exercises (20 pts. each)</td>
<td>220 points</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>815 points</strong></td>
</tr>
</tbody>
</table>

**Exam and Quiz Policy:** There will be 4 exams given during the course of the semester. If you miss an exam and do not make it up within the guidelines specified in the Make-up Policy (see below), you will receive a zero. Quizzes are given either during or before class and will cover any reading, video, etc. assigned for the class that day. There are six planned quizzes, but more may be given as deemed necessary. You may drop 1 exam and 1 quiz only if you have taken all exams and quizzes. If you miss an exam or quiz and your absence is unexcused, you will receive a zero, and this zero cannot be dropped.

You **MAY NOT** wear hats during exams or quizzes, and all electronic devices must be placed at the front of the room during exams.

**Make-up exam policy:** All students are expected to be present on the date of an exam. If, due to unavoidable circumstances, you are unable to be present, you should contact me immediately so that we may discuss whether or not a make-up exam is to be allowed and under what conditions. Any make-up exam must be taken before the next class meeting, when exams will be returned to the class. If you miss a scheduled lecture exam you must notify the instructor within **24 hours**. If the reason for missing the exam is excused you must make the exam up within **48 hours** unless there are extenuating circumstances and an alternate time has been arranged by the instructor. If the reason for missing the exam is unexcused, the student will receive a zero for that exam.

**Class Attendance Policy:** Students are expected to attend, completely, all class meetings. Much of the course work is done in class and in groups—work that can’t be done effectively with a group member missing. Material covered
in class often builds upon the readings and textbook materials. You are responsible for the additional material covered during class. **Three absences will result in failure (each 2 times you are late counts as 1 absence).** An **authorized absence** is defined as a serious personal illness; a family emergency such as a serious illness or death involving a member of the immediate family; jury or military duty; and representing the University in athletics, academic, professional and leadership development pursuits. **Authorized absences must be officially documented.**

If a student is not in class (excused or unexcused) and an in-class activity is missed, no **make-up points** will be given. If the absence is excused, the activity will be waived. It will not count toward or against your grade.

Attendance in lab is **mandatory.** If you miss lab and it is NOT excused or you fail to make the excused lab up, you will receive a zero for the report for that lab. **Close-toed shoes** are mandatory in lab. You will be asked to leave if you are not wearing them, and will receive a zero for that lab.

**Assignments:**
**Lab Homework:** Refer to the schedule for what is due for each lab. Assignments are turned in on Blackboard unless otherwise indicated. Lab homework is always due the next lab period, unless otherwise noted.
**Outside Homework:** There are several outside of class activities and homework assignments. Details for each of these assignments are given in lecture.

**Discussions of primary literature:** Throughout the semester, students will evaluate and discuss primary literature. All students will be expected to come to class prepared to explain the reading material to their peers. Details pertaining to this activity will be given in class.

**Field Site Monitoring and Research Project:** At the beginning of the semester, we will be set up a collaborative field study on SUNY OW’s campus. Each week, students will be responsible for recording data collected at the site and entering that data into a shared database, which will eventually be used to write a research report. Groups of 3-4 students will define a research question, modify the class-designed study to address that question, collect and analyze the data that result, and present their project, including evidence-based inferences, to their peers. Details of this assignment will be given in class.

**Deadlines:** Work more than **two weeks** late will NOT be accepted, whether the absence is excused or not. Without an approved extension, all late work will result in automatic point deductions (**10 percent per day**).

**Guidelines for group work and discussions**
I believe that students learn better through group-based inquiry than through non-interactive lectures. In order for these activities to be successful, all students must be active, respectful participants. Evaluations by your peers will contribute to your final score for most group assignments. To get the most out of group work, each student has certain responsibilities:

1) Be hospitable - Encourage everyone to participate. Ask other people for their opinion.
2) Participate - Voice your opinion. Feel free to offer suggestions others have not considered.
3) Be mindful - Carefully listen and consider what other people are saying.
4) Be humble - Admit that your knowledge and experience are limited and incomplete.
5) Show concern for others - Make sure everyone in your group is comprehending. This may require that you temporarily step into the teacher role and will help you learn even more.
6) Be deliberate - Consider the discussion from every angle and every option.
7) Appreciate - Express appreciation for other's good ideas or comments.
8) Be efficient - We have limited time for group work, so stay on task.

*Part of this guide is a summary of ideas from Bethany Stone, University of Missouri, and Brookfield, S. D. & Preskill, S. (1999). **Discussion as a way of teaching: Tools and techniques for democratic classrooms.** San Fran: Jossey-Bass.*

**VI. Specific Learning Objectives**
Natural Sciences Learning Outcomes: Understanding of the methods scientists use to explore natural phenomenon, including observation, hypothesis development, measurement of data collection, experimentation, evaluation of evidence, and employment of mathematical analysis.

Plant Biology Lecture and Lab Goals: Students will...
- Learn about plant structure, life cycles, natural history, physiology, metabolism, and nutrition.
  - Give specific examples of physiological adaptations, development, and reproduction of plants
  - Use general terminology to describe macroscopically observable plant structures and internal anatomical features of vascular plants
  - Describe important components of the cellular basis of plant life
- Learn fundamental principles of plant evolution
  - ID major groups of plants, including bryophytes, ferns, cycads, mosses, gymnosperms, and angiosperms
  - Demonstrate an understanding of the biology of plants, including origin and phylogenetic relationships
  - Use evidence of comparative biology and genetics to explain the process and theory of evolution
  - Explicate how adaptation of plants to a variety of environments on Earth has resulted in a great diversity of structures and physiological processes.
- Explain the important roles plants play in the environment, aka plant ecology
  - Explicate ecological interconnectedness of life on Earth
  - Explain large-scale behavior of vegetation
  - Relate physical features of the environment to the structure of populations, communities, and ecosystems
- Discuss the important roles plants play in human society and vice versa
  - Explain the economic and other social importance of plants
  - Describe how human selection has affected aspects of crop plants
  - Give examples of how agriculture shapes human populations, including their size, distribution, and cultures
- Use critical thinking skills to judge the importance and validity of scientific findings.
  - Be able to formulate testable hypotheses
  - Gather and analyze data to assess support for their hypotheses
  - Present their hypotheses and evidence in verbal and written formats used by scientists
  - Access the primary literature, ID relevant works for a topic, evaluate scientific content of the works

*** This syllabus is subject to change at the discretion of the instructor to accommodate the instructional and/or student needs. It is the student's responsibility to keep abreast of the changes.

FINAL NOTE:
All students are encouraged to contact Dr. Noutsos at any time during the semester if you have questions or concerns about your work in this course. Please remember that communication is the key to succeeding in college. I do expect that students put forth the necessary time and preparation for the course, but I also understand that it can sometimes be difficult to succeed. I am always here to help!
VII. **Tentative Course Calendar** (This syllabus and schedule is subject to change at the discretion of the professor and/or college. It is the students’ responsibility to keep abreast of the changes.)

<table>
<thead>
<tr>
<th>DATE</th>
<th>CONTENT</th>
<th>READINGS</th>
<th>LAB</th>
<th>ASSIGNMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Introduction and Plant Structure</strong></td>
<td></td>
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<tr>
<td>5/29</td>
<td>The Green Kingdom</td>
<td>Ch 1</td>
<td>NO LAB</td>
<td></td>
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<tr>
<td>5/30</td>
<td>Cells and Tissues</td>
<td>Ch 3 and 4</td>
<td>Site monitoring: Transects Root and shoots cells</td>
<td>Due: the cell and Site monitoring worksheet (WS)</td>
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<tr>
<td>5/31</td>
<td>Roots and Stems</td>
<td>Ch 5 and 6</td>
<td></td>
<td>Site Monitoring</td>
</tr>
<tr>
<td>6/4</td>
<td>Exam 1 (on ch 1-6)</td>
<td></td>
<td>Leaves and tissues</td>
<td>Due: Research Question and Mitosis and Meiosis</td>
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<tr>
<td></td>
<td><strong>Plant Physiology</strong></td>
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<tr>
<td>6/5</td>
<td>Flowers and Fruits</td>
<td>Ch 7 and 8</td>
<td></td>
<td>Due: Research proposal draft and Roots Site Monitoring</td>
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<tr>
<td>6/6</td>
<td>Water in plants and Peer Review 1</td>
<td>Ch 9</td>
<td>Primary lit.</td>
<td>Flowers and Fruits</td>
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<td></td>
<td>Plant structure readings</td>
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<tr>
<td>6/7</td>
<td>The hormonal plant</td>
<td>Ch 11</td>
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<tr>
<td>6/11</td>
<td>Metabolism</td>
<td>Ch 10</td>
<td>Seeds</td>
<td>Site Monitoring Due: Final research proposal And Stems</td>
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<td>Plant defense &amp; nutrition</td>
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<tr>
<td>6/12</td>
<td>Exam 2</td>
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<td></td>
<td><strong>Plant Diversity</strong></td>
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<td>Due: Site Monitoring Data and Leaves</td>
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<tr>
<td>6/13</td>
<td>Evolution</td>
<td>Ch 15</td>
<td>Site monitoring: Voucher ID</td>
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<td></td>
<td>Plant names and classifications</td>
<td>Ch 16</td>
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<tr>
<td>6/14</td>
<td>Bryophytes &amp; alternating generations</td>
<td>Ch 20, pp. 222-4</td>
<td></td>
<td>Due: Site Monitoring Data and Measure pigments in plants</td>
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<tr>
<td></td>
<td>Seedless vascular plants</td>
<td>Ch 21</td>
<td></td>
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<tr>
<td>6/18</td>
<td>Gymnosperms</td>
<td>Ch 22</td>
<td>Climate change: Phenology</td>
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<td></td>
<td>Angiosperms</td>
<td>Ch 23</td>
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<tr>
<td>6/19</td>
<td>Exam 3</td>
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SUNY COLLEGE AT OLD WESTBURY

POLICY ON ACADEMIC INTEGRITY

Administered by the Office of Academic Affairs

As is the policy of all SUNY institutions, students are expected to maintain the highest standards of honesty in their college work. Any act which attempts to misrepresent to an instructor or College official the academic work of the student or another student, or an act that is intended to alter any record of a student’s academic performance by unauthorized means, constitutes academic dishonesty. Cheating, forgery and plagiarism are considered serious offenses and are subject to disciplinary action.

Cheating Cheating is defined as giving or obtaining information by improper means in meeting any academic requirements. Examples of cheating, although not inclusive, include: unauthorized giving or receiving of information for an examination, paper, laboratory procedure, or computer assignment (file or printout); taking an examination for another student or allowing another student to take an examination for you; altering or attempting to alter a grade either on graded work or in an instructor’s records or on any College form or record.

Forgery Forgery is defined as the alteration of college forms, documents, records, or the signing of such forms or documents by someone other than the proper authority.

Plagiarism Plagiarism is defined as the use of material from another author whether intentional or unintentional, without referencing or identifying the source of the material. If students have any questions as to what constitutes plagiarism, it is their responsibility to get clarification by consulting with the appropriate instructor.

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Plagiarism: (From Perrin and Ebbitt’s Writer’s Guide) “Plagiarize is defined in Webster’s Seventh New Collegiate Dictionary as ‘to steal and pass off as one’s own (the ideas or words of another.)’ Steal is an ugly word, but plagiarism is an ugly thing. It occurs in college courses for several different reasons, including panic, dishonesty and ignorance of what plagiarism is. Whatever the cause, the penalty—a failing mark in the paper, and, if the cheating is chronic, a failing mark in the course—is justified. Copying someone else’s work is the most complete failure possible.” Our expectation is that students do their own work, not copy the words and ideas of another and present those words and ideas as their own. Periodically, you will be asked to work together as a team to produce ideas, concepts, and other documents for submission. In these circumstances, submitting identical or like information is appropriate. In any other situation, the submission of like or identical work will be considered plagiarism. Plagiarism shall be considered misconduct sufficient to bar you from further participation in the class and will result in a grade of "F" on the assignment and/or an "F" in the class.”
Technology in Class

Personal electronics (e.g., laptops, iPads, cell phones) can be used to enhance learning and instruction in a variety of ways, but during class time they should be used only for class-related activities. Texting and the use of other electronic devices for non-class-related activities should be reserved for class break times. Additionally, with permission of the instructor, audio and/or video recordings may be used for your individual learning but cannot be distributed to others without the instructor’s permission. During exams, all electronic devices must be placed at the front of the classroom and cannot be accessed during the exam.
Office of Services for Students with Disabilities

SUNY/Old Westbury is committed to assuring that all students have equal access to learning and extracurricular activities on campus. If you have, or suspect you may have a physical, psychological, medical or learning disability that may impact how you function academically and/or your access to activities on campus, please contact Dr. Lisa Whitten, Director of the Office of Services for Students with Disabilities (OSSD). She will work with you to determine which accommodations you need, and provide you with documentation for your professors. The OSSD is located in the NAB, Room 2064. You can reach Dr. Whitten at 516.873.3009 or whittenl@oldwestbury.edu. OSSD services are free and confidential.

Accommodations for Students with Special Needs

If you have or suspect you may have a physical, psychological, medical or learning disability that may impact your course work, please contact The Office of Services for Students with Disabilities (OSSD), Stacey Defelice, Director, Phone: 516-876-3009, FAX: 516-876-3005, TTD: 516-876-3083, defelices@oldwestbury.edu. The office will help you determine if you qualify for accommodations and help you get them. All support services are free and all contacts with the OSSD are strictly confidential.

Visit the Writing Center for help brainstorming or organizing your ideas or for feedback on a draft. You can make an appointment online at https://oldwestbury.mywconline.com or stop by the Writing Center located in room L-242 on the main floor of the Library in Campus Center. Hours: Mondays and Tuesdays, 11am-9:30pm and Wednesdays and Thursdays, 10am-7pm. Phone: (516) 876-3093.