

BOT4650/6656 - Plant Symbiosis - 3 credits – Spring 2025
Tuesdays Periods 3 – 5 (9:35 - 12:35 am), Rolfs Hall 114

Instructor:

Dr. Christine Davis
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Office: 620 Carr Hall
Office hours: by appointment

Required texts:

The Symbiotic Habit, Angela E. Douglas. 2010.
Also, **book excerpts and journal articles** posted on the course Canvas site (see schedule).

Course description:

In this course, I hope to foster a deeper understanding of the crucial role symbioses play in shaping the diversity of life on the planet. The course will devote time to discussing broad concepts – such as generalities among symbioses, origins and establishment of symbioses, coevolution and co-speciation – as well as learning the specifics of some well-studied exemplars of plant symbioses. Our study will consist of instructor and student-led discussions of texts and primary literature and short written assignments.

Upon completion of this course, you will be able to:

- Define symbiosis in several ways
- Describe the evolutionary and ecological significance of symbioses
- Explain our current understanding of how symbioses form and how they are maintained
- Discuss how symbiosis can lead to diversification
- Summarize the specifics of some plant symbioses

During this course, you will practice:

- Finding journal articles of interest
- Evaluating and synthesizing journal articles
- Leading and participating in scholarly discussion with classmates

Course grading:

Participation in discussion 50%
Locating Literature Assignments 20%
Leading discussion 30%

Grading scale:

90 – 100% = A; 80 – 89.9% = B; 70 – 79.9% C; 60 – 69.9% D; below 60 = E

Course attendance and make up policies:

Attendance is required and essential for success in this course and is a component of your participation grade. I understand that absences happen, but if you make this a habit, you are guaranteed to perform poorly. If you have a valid documented excuse and notify me in advance, you may be able to make up missed discussion assignments. I will determine this on an as-needed basis.

Policy on electronic devices:

Use them if you want, but if they become distracting to your classmates, you will be asked to leave. Also, please note that the use of devices for socializing during class is obvious to your classmates and I. We'll make a mental note of it as disrespectful, and it leaves a negative impression.

Paper discussions:

Each student will work with a partner to lead class discussions of a research paper. All students are responsible for reading the paper and contributing to discussion.

Rubric for participation points:

0 points = Absent

1 point = Present but does not contribute

2 points = Participates in discussion by adding an opinion or asking a question

3 points = Participates in discussion by adding an opinion, posing a thoughtful question, and answering questions

4 points = Makes exemplary contributions to discussion by integrating concepts, introducing novel perspectives, and drawing out additional contributions from classmates

Locating Literature Assignments

For these assignments, you will locate peer-reviewed scientific articles about symbiosis. **Please meet with your partner and choose a primary source article that interests you, then BOTH of you upload it to the Canvas assignment to get credit for each assignment.** Don't choose hastily! You'll be committed to read the articles on your own, discuss them with your partner during the semester, and lead a discussion on each of them. This means you'll need to understand them and be able to explain them to your peers. You must submit the article you've chosen for each Locating Literature assignment on Canvas TWO WEEKS prior to your assigned discussion date (see the syllabus).

Important: If you are off campus while working on this assignment, you will need to use your University of Florida VPN to access articles that you would otherwise need to pay to access. This link will take you through the process of downloading and installing the VPN: <http://www.uflib.ufl.edu/login/vpn.html>

Guidelines for leading and facilitating discussion

When you lead the discussion, you are the “expert” on the readings. It is your job to help the class meet the following goals:

1. Clarify the main points of the readings.
2. Clarify the basics of the methods used (if applicable).
3. Reveal interesting topics and questions for further discussion or debate.
4. Apply the readings to the course topics being considered.

To lead and facilitate a good discussion:

- Get contributions from all classmates.
- Avoid domination by any one speaker (including you, the discussion leaders).
- Write a list of questions you plan to ask about the article that will facilitate discussion. Good questions often start with phrases such as “What did you think about...”, “Can you help the group understand...”, “What evidence did the author show to support...”, etc.
- Start the discussion with any crucial terms and definitions from the article that you think everyone needs to understand before a real dive into the article can begin.
- Try not to answer your own questions.
- Minimize or eliminate rhetorical questions or “yes/no” and “agree/disagree” questions.
- It's okay to wait a while in silence after you ask a question. It often takes a little while for people to think and process before answering – be patient.
- It's okay to stray from the planned list of questions. Just steer the discussion back when you can.
- After the initial discussion about terms, minimize “recitation” type questions; that is, questions that ask your classmates to recall facts or knowledge about the subject matter.
- When appropriate, summarize portions of the discussion (for example, summarize what the class has learned about the methods used in a study, or the key components of the experiment in the paper).
- When appropriate, paraphrase your classmates' comments, responses, and questions to clarify their meanings to the class. (This is called active listening.)
- Use eye contact, clear confident speaking, and positive body language. Avoid actions such as crossing your arms, looking at your smartphone, or deep sighs.

Rubric for discussion leading:

Grading Criteria	Descriptors	Points
Preparation	Demonstrates: Good preparation and familiarity with readings Cooperation and collaboration among leaders	___/4
Discussion techniques	Discussion techniques: Engage students—motivating Encourage all students to contribute Guide but do not dominate discussion	___/4
Content & discussion questions	Questions asked: Lead the class toward discussion goals Are clear Refer to readings	___/4
Facilitation skills	Leaders demonstrate good facilitation skills: Active listening Summarizing	___/4
Communication skills	Facilitators engage class through their: Eye contact Clear and confident voice Gestures	___/4
	Total points	___/20

University policies and resources

Attendance and make-ups

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found in the online catalog at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>.

Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered

published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

Accommodations

Students who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center by visiting <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluations

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at gatorevals.aa.ufl.edu/public-results/.

Academic Integrity

“UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<http://www.dso.ufl.edu/sccr/process/student-conduct-honorcode/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Resources Available to Students

Health and Wellness

- *U Matter, We Care*: umatter@ufl.edu; 392-1575
- *Counseling and Wellness Center*: <http://www.counseling.ufl.edu/cwc/Default.aspx>; 392-1575
- *Sexual Assault Recovery Services (SARS)*: Student Health Care Center; 392-1161
- *University Police Department*: <http://www.police.ufl.edu/>; 392-1111 (911 for emergencies)

Academic Resources

- *E-learning technical support*: Learningsupport@ufl.edu; <https://lss.at.ufl.edu/help.shtml>; 352-392-4357 (opt. 2)
- *Career Resource Center*: Reitz Union; <http://www.crc.ufl.edu/>; 392-1601
- *Library Support*: <http://cms.uflib.ufl.edu/ask>
- *Teaching Center*: Broward Hall; 392-2010 or 392-6420
- *Writing Studio*: 302 Tigert Hall; <http://writing.ufl.edu/writing-studio/>; 846-1138

Procedure for Conflict Resolution

Any classroom issues, disagreements or grade disputes should be discussed first between the instructor and the student. If the problem cannot be resolved, please contact the Undergraduate Coordinator or the Department Chair. Be prepared to provide documentation of the problem, as well as all graded materials for the semester. Issues that cannot be resolved departmentally will be referred to the University Ombuds Office (<http://www.ombuds.ufl.edu>; 392-1308) or the Dean of Students Office (<http://www.dso.ufl.edu>; 392-1261). For further information refer to https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf (for residential classes) or <http://www.distance.ufl.edu/student-complaintprocess> (for online classes).

University grade policies:

For additional important information regarding UF's grade policies, please see:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Course schedule (subject to adjustment)

Date	Topic	Reading	Discussion	Draw	Draw
14-Jan	Introduction	Syllabus	Intro – Draw for discussion leading		
21-Jan	How is symbiosis significant?	Margulis p. 5 - 12; Douglas p. 12 - 23	Discussion leader - Dr. Davis		
28-Jan	How do we define symbiosis?	Douglas p. 1 - 11; Paszkowski 2006	Discussion leaders 1 and 2	1	2
4-Feb	Symbiotic spectra from antagonist to mutualist	Douglas p. 24 - 38; Heil et al. 2013	Discussion leaders 3 and 4	3	4
11-Feb	Evolution and partner capture	Douglas p. 39 - 55; Genre et al. 2020	Discussion leaders 4 and 1	4	1
18-Feb	Mutualism and cheating	Douglas p. 56 - 66; Jandér and Herre, 2010	Discussion leaders 2 and 3	2	3
25-Feb	Vertical transmission and assimilation	Douglas p. 66 - 90; Gilson 2001	Discussion leaders 1 and 3	1	3
4-Mar	Establishment of symbioses	Douglas 91 -105; Clúa et al. 2018	Discussion leaders 1 and 3	2	4
11-Mar	Diversification and coevolution	Douglas 125 - 150; TBA	Discussion leaders 1 and 2	1	2
18-Mar	No class - spring break				
25-Mar	No class – Dr. Davis traveling				
1-Apr	TBA	TBA	Discussion leaders 3 and 4	3	4
8-Apr	TBA	TBA	Discussion leaders 4 and 1	4	1
15-Apr	TBA	TBA	Discussion leaders 2 and 3	2	3
22-Apr	TBA	TBA	Synthesis		