

## BOT 4851C – Medical and Forensic Plant Biology

Fall 2021

### Instructor Information

Dr. Emily Sessa, Associate Professor of Biology

Office location: Bartram 521A

Student office hours: by appointment (your choice of Zoom or in-person!)

E-mail address: [emilysessa@ufl.edu](mailto:emilysessa@ufl.edu)

Website: <http://sessalab.biology.ufl.edu>

### Course Information

**Catalog Description:** Basic plant taxonomy, systematics, phytochemicals, uses of plants by animals and various human cultures, and in the development of modern medicine and drug development. Uses of plant tissues and products in forensic investigations will also be discussed.

**Credit Hours:** 3

**Pre-requisites and Co-requisites:** BSC 2011, minimum grade of B (or corresponding AP credit)

**Course Objectives:** By the end of the course, students will be able to do the following:

- Describe the **basic structures of a plant** and **functions of the major plant organs**
- Describe the **tissue types of plants** and how they are used in medicine and forensics
- Describe the **major types of compounds and chemicals plants produce**, what their roles are in the plants, and how they have been co-opted for use by humans
- Discuss the **early history of modern medical science** and the role of plants in medicine
- Describe the ways in which plants have been used **medicinally throughout human history**
- Discuss medical uses of plants in **different human cultures at different times**
- Describe **major classes of drugs** that are derived from plants, and how they were discovered
- Explain how plants can be used in **crime scene investigations**
- Discuss **major historical cases** where plants played a key role in forensic science
- **Evaluate** scientific literature and **examine** conclusions and findings
- **Evaluate** claims about drugs and whether they have a scientific basis
- **Debate** pressing issues related to plants and axes of human culture

**Course Meeting Times and Locations:** M and W, 10:40–12:35 (periods 4 and 5), Rolfs Hall room 114

**Course Website:** All course materials and related information (including syllabus and all required readings) will be posted on the course E-Learning (Canvas) website at <https://elearning.ufl.edu>. You are responsible for all announcements made in class and/or posted on the course website for this course. Please make sure your Canvas account is set up to send you emails!

## Grading

### Description of grade components:

- **Paper discussions (25 pts each).** On paper discussion days, we will use the Jigsaw method to discuss three papers at a time. Each student is responsible for becoming an expert on one paper before coming to class. In class, you will discuss your paper with other students who also read that paper, and then report back to another group of students who read a different paper. Finally we will discuss all three papers as a group. Grades for the discussions will be based on participation (15 pts) and a 1-2 paragraph summary of the discussion that should be turned in before the end of class the same day (10 pts). The lowest one is dropped.
- **Debates (50 pts each).** Debate grades includes three parts:
  - (15 pts) Submit **1-page** summary of your “side” in the debate - what are your arguments, and how do you anticipate responding to the other side? Citations supporting your argument must be included on a second page (minimum of three, carefully chosen!). Assignment must be turned in on Canvas before the debate.
  - (20 pts) Participate in the debate itself.
  - (15 pts) Submit a **1-page** summary of the debate. How did the major arguments differ from what you expected going in? Who do you think won and why? What follow up points do you have in favor of your argument, or were you convinced by the other side? Assignment is due through Canvas before the start of the next class period.
- **Traditional medicine presentation (50 pts).** Each student will choose one culture or tribe, contemporary or historical, and investigate how the members of that group used plants medicinally. What are or were the major important plants they use/d, how did plants figure into their religion or mythology, who is/was responsible for knowledge about medicinal plants, how was this knowledge passed on, what is the relationship with modern medicine, etc. Each student will give a 10 minute presentation in class, with slides, that describes their findings. Presentations are graded only on content, not presentation style, technique, etc.
- **Lab worksheets (20 pts each).** The labs have worksheets or write-ups associated with them. These are due either at the end of class, or before the start of the next class period. The lowest two grades are dropped.
- **Final “crime scene” analysis (50 pts).** The class final is in the form of a crime scene, where students are responsible for using what they’ve learned in the forensics portion of the class to solve a mystery. The final will be scheduled during the university-assigned final exam times. Each student is responsible for analyzing the evidence and submitting their solution to the crime, with a full write-up of their analysis and how they reached a conclusion.

There will be no curve applied to grades for any assignments, or to final course scores.

Note that a “C-” will not be a qualifying grade for critical tracking courses. In order to graduate, students must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). Note: a C- average is equivalent to a GPA of 1.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please contact the [University Registrar's Office](#).

**Graded items and points:**

Item	Quantity	Points per	Points Total
Paper discussions	8	25	200
Debates	2	50	100
Presentation	1	50	50
Lab Worksheets	10	20	200
Crime Scene	1	50	50
			<b>600 points total</b>

**Points to letter grade translation:**

A	540 and above	C	420–443
A-	522–539	C-	402–419
B+	504–521	D+	384–401
B	480–503	D	360–383
B-	462–479	D-	342–359
C+	444–461	E	341 and below

**Guidelines for Written Assignments**

The following rules apply to ALL of the written assignments listed above (pre- and post-debate summaries, paper discussion summaries, etc.):

- Use 12 point font with 1.5 line spacing.
- Grammar and spelling will be considered in your grade. Please edit your work!
- When applicable, cited works must follow MLA style.

**Attendance and Make-Up Policy**

Students are expected to be on time for class, as a courtesy to the instructors and other students. Attendance is required and is essential for success in this class. In-class activities will differ day to day, but will emphasize participation and group work. Missing classes will therefore hurt your ability to learn the material covered in the course. If you need to miss a class, please email Dr. Sessa as soon as you know you will be absent so that arrangements can be made for you to make up the material. This will generally involve completing an alternate assignment for a proportion of the original points (e.g., 80% or 90%). If absences continue, that proportion will drop, unless you provide acceptable documentation for an extended absence (e.g., doctor's note for hospital treatment).

If you know you will be absent for **religious or athletic reasons**, that's fine, but you must alert the instructors at least one week in advance (preferably give us your schedule of known absences within the first two weeks of the semester). The policies for allowable absences and make-up work follow the university attendance policies: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>. The student is responsible for scheduling any make-up work with the instructor.

## Honesty Policy & Plagiarism

All students registered at the University of Florida have agreed to comply with the following statement:

*"I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University."*

In addition, on all work submitted for credit the following pledge is either required or implied:

*"On my honor I have neither given nor received unauthorized aid in doing this assignment."*

If you witness any instances of academic dishonesty in this class, please notify the instructor or contact the Student Honor Court (392-1631) or Cheating Hotline (392-6999). For additional information on Academic Honesty, please refer to the University of Florida Academic Honesty Guidelines at: <http://www.dso.ufl.edu/judicial/procedures/academicguide.html>.

**Plagiarism:** Plagiarism is a serious violation of the honor code and will be taken extremely seriously. It can result in a failing grade on the assignment and/or for the entire course, report to the Dean of Students Office, and potentially expulsion from the University of Florida. Please make sure you understand what plagiarism is; often students do not fully understand what kinds of activities will be considered plagiarism. These include, but are not limited to:

- Failing to cite sources, or citing them improperly
- Submitting all or part of someone else's work as if it is your own
- "Borrowing" or copying lines without crediting the source
- Submitting duplicate assignments
- Collaborating or receiving substantial help in writing your assignment

**Please note:** It is **incredibly obvious** when you have copied material directly from the internet. I (your professor) will know if you have done this.

## Conduct in Class

Please be courteous and do not talk during lecture. This can be distracting to other students and the instructor. Only approved electronic devices may be used in class. Approved electronic devices are laptop computers (when used to take notes or otherwise participate in classroom activities) and voice recording devices. Unapproved electronic devices include cell phones, video recorders, digital cameras and MP3 players. If you use these devices you may be asked to leave. Please note that it's very obvious to instructors when you are using these devices for socializing during class.

## Student Accommodations

Students who will require classroom accommodations must contact the [Disability Resource Center](#), in Reid Hall. Please [visit this link](#) for information on getting started with the DRC, if you are new to them or UF. You can find information on their website about accommodations for housing, testing, and in-class needs, as well as information about [scholarships to support students with disabilities](#) and [resources for student success](#).

For general inquiries about the DRC, email: [DRC@ufsa.ufl.edu](mailto:DRC@ufsa.ufl.edu)

For students with approved testing accommodations who have questions or concerns about accommodated testing services, email: [DRCTesting@ufsa.ufl.edu](mailto:DRCTesting@ufsa.ufl.edu)

It is the policy of the University of Florida that the **student**, not the instructor, is responsible for arranging accommodations when needed. The student must complete the registration and documentation process, and will work with a Learning Specialist to request accommodations. The DRC will then work with faculty to accommodate the student appropriately. The student must complete this process and provide documentation to the instructor **by the second week of class**. Accommodation requests must be submitted every semester, for every class in which accommodations are required.

### Mental Health and Wellness

Your well-being is important to everyone at the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need.

**Please remember that asking for help is a sign of strength.**

#### **U Matter, We Care:**

- If you or someone you know is in distress, please contact [umatter@ufl.edu](mailto:umatter@ufl.edu) so that the U Matter, We Care Team can reach out to the student in distress.
- A nighttime and weekend crisis counselor is available by phone at 352-392-1575.
- The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Visit the [U Matter, We Care website](#) for more information.

**Counseling and Wellness Center:** Visit the [Counseling and Wellness Center website](#), find the Center at 3190 Radio Road, or call 352-392-1575 for information on crisis services as well as non-crisis psychological/psychiatric services.

**Student Health Care Center:** Call 352-392-1161 for 24/7 information to help you find the care you need, or visit the [Student Health Care Center website](#).

**University Police Department:** Visit the [UF Police Department website](#) or call 352-392-1111.

**UF Health Shands Emergency Room/Trauma Center:** For immediate medical care call 352-733-0111 or 911, or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608.

### Basic Needs and Security

Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, is urged to contact the Dean of Students for support (<https://dso.ufl.edu>). Please also notify your professor if you are comfortable doing so. UF has a **food pantry** on campus (located near the HUB) that is available to all students. No proof of need is required; all you need is a UF ID card. Field & Fork Food Pantry: <https://pantry.fieldandfork.ufl.edu/>

## Academic Resources

**E-learning technical support:** Contact the [UF Computing Help Desk](mailto:helpdesk@ufl.edu) at 352-392-4357 or via e-mail at [helpdesk@ufl.edu](mailto:helpdesk@ufl.edu).

**Career Resource Center:** Visit the [Career Connections Center website](#). Located in the Reitz Union, 352-392-1601. Career and job search services.

**Library Support:** Visit the [Library Support website](#) for information about various ways to receive assistance with respect to using the libraries or finding resources.

**Teaching Center:** Visit the [Teaching Center website](#). Located in Broward Hall, or call 352-392-6420 to make an appointment. General study skills and tutoring.

**Writing Studio:** Visit the [Writing Studio website](#). Located in 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.

## Course Evaluation

Students are expected to provide feedback on their experience in this course based on 10 criteria. These evaluations are conducted online at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester. You will be notified by email of the specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu>.

## CLAS Statement on Masks

As of the start of the Fall 2021 semester, everyone is expected to wear a mask while indoors on campus, per university requirements. Masks should cover your nose and mouth.

## UF Statement on In-Class 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.

### Course Schedule (subject to change!)

Week	Day	Date	Topic
1	M	8/23	Welcome, introductions, Jigsaw example
	W	8/25	Angiosperm overview, lecture and lab ( <b>worksheet 1</b> )
2	M	8/30	Phylogeny overview, lecture and discussion
	W	9/1	Jigsaw 1: Plant phylogeny and traditional medicine ( <b>discussion 1</b> )
3	M	9/6	No class – Labor Day
	W	9/8	Plant form and function, lecture and lab ( <b>worksheet 2</b> )
4	M	9/13	Supermarket botany ( <b>worksheet 3</b> ) and plants used in a day
	W	9/15	Plant defenses, lecture and lab ( <b>worksheet 4</b> )
5	M	9/20	Jigsaw 2: Plant defenses ( <b>discussion 2</b> )
	W	9/22	Plants used in a day, discussion
6	M	9/27	Jigsaw 3: Zoopharm, birds ( <b>discussion 3</b> ), time for debate prep
	W	9/29	Phytochemicals: terpenoids, lecture and lab ( <b>worksheet 5</b> )
7	M	10/4	Jigsaw 4: Zoopharm, primates ( <b>discussion 4</b> ), time for debate prep
	W	10/6	Phytochemicals: phenolics, lecture and lab ( <b>worksheet 6</b> )
8	M	10/11	Debate: Legalization of marijuana ( <b>debate 1</b> )
	W	10/13	Phytochemicals: alkaloids, lecture and lab ( <b>worksheet 7</b> )

<b>9</b>	M	10/18	Jigsaw 5: ETOH ( <b>discussion 5</b> )
	W	10/20	Phytochemicals: glycosides, lecture and lab ( <b>worksheet 8</b> )
<b>10</b>	M	10/25	Jigsaw 6: Psychoactive plants ( <b>discussion 6</b> )
	W	10/27	Poisons derived from plants, lecture and lab ( <b>worksheet 9</b> )
<b>11</b>	M	11/1	Debate: Bioprospecting ( <b>debate 2</b> ) <b>Note: Today is the final day to confirm your presentation topic!</b>
	W	11/3	No class
<b>12</b>	M	11/8	Jigsaw 7: Doubleblind ( <b>discussion 7</b> )
	W	11/10	Drug development from medicinal plants, lecture and lab ( <b>worksheet 10</b> )
	M	11/15	Student presentations - traditional uses of plants in various cultures
	W	11/17	Student presentations - traditional uses of plants in various cultures
	M	11/22	Jigsaw 8: Supplements ( <b>discussion 8</b> )
	W	11/24	No class - Thanksgiving
	M	11/29	Forensic botany: intro and case studies Jigsaw 9: Forensic botany ( <b>discussion 9</b> )
	W	12/1	Forensic botany: plant ecology Lab activity: wood anatomy ( <b>worksheet 11</b> )
	M	12/6	Forensic botany: pollen and other microscopic analyses Lab activity: microscopy, palynology ( <b>worksheet 12</b> )
	W	12/8	Final, held in class: Crime Scene! ( <b>final "exam"</b> )