INSTRUCTOR INFORMATION

Instructor: Amanda Broz, PhD (she)
Email: amanda.broz@colostate.edu
Campus office: 414 Biology (251 West Pitkin St., Fort Collins, CO)
Communication Policy: Responses to emails will be provided as soon as possible, but within 36 hours at the latest. I will do my best to let you know ahead of time if I will be unavailable due to sickness or other circumstances. You can email me directly (please include “BZ581” in the subject line!) or through Canvas.

PREREQUISITES FOR COURSE

Prerequisites: BZ120 or a comparable introductory plant biology course. Contact me if you require an override. Some class material will be based on current scientific literature, so a basic understanding of the components of a scientific paper is desired but not required.

COURSE DESCRIPTION

This course enables students to develop a comprehensive understanding of numerous aspects of cannabis plant biology. These aspects include the long history cannabis shares with humans, the products derived from cannabis, basic cannabis anatomy and biology, techniques for cultivation, secondary metabolite synthesis, and genetic improvement. Emphasis is placed on understanding and interpreting current scientific experiments in cannabis biology.

Topics covered include:

- Evolution, domestication and the many uses of cannabis
- Cannabis plant anatomy and development
- Cannabis propagation, horticulture and agronomy
- Cannabinoid synthesis and production
- Medical cannabis and the endocannabinoid system
- Cannabis genetics and breeding
- Cannabis pests, diseases and sustainability

LEARNING OBJECTIVES

Upon the completion of this course, students will be able to:

1. Describe the origins of cannabis, as well as the history and current status of cannabis cultivation.
2. Describe the many uses of cannabis and explain the difference between hemp and marijuana.
4. Describe methods of cannabis propagation, cultivation, and production systems.
5. Define and describe basic plant processes related to water relations, nutrition (inorganic and photosynthetic), metabolism, molecular and general genetics, and stress response.
6. Explain metabolic pathways that are involved in the synthesis of economically important secondary cannabis compounds like cannabinoids and terpenoids.
7. Implement knowledge of plant biology to answer practical questions related to real-world situations where cannabis is growing in the field or a greenhouse.
8. List and describe techniques used to study plant biology and explain their applications.
9. Implement knowledge of plant molecular genetics and biotechnology to answer practical questions related to real-world situations where plants are propagated in tissue culture or bred using modern genetic techniques.
10. Describe the parts of a scientific paper and interpret figures from scientific journal articles.
11. Independently research and report on a topic related to cannabis biology by searching the literature and creating an integrated summarizing presentation.

TEXTBOOK / READINGS / MATERIALS

Textbook:
The textbook for this course is: “Cannabis, A Complete Guide” (2017) by Ernest Small. The text is available to you through the CSU Libraries, at no charge as a CSU student. To access the text, open the link above, then click the Taylor & Francis eBooks link that appears. The system may ask you to log in, then click the Download button for a pdf of the text you may save to your computer. If you have problems accessing the text, please contact CSU Libraries.

Readings:
Additional material including background readings and scientific articles will be available through CSU course reserve – links to this material are available in relevant modules in Canvas.

Additional Material:
All course materials are listed online via the CSU Canvas website: syllabus, presentations, links to videos and papers. Quizzes, discussions and exams are also online on Canvas, as well as grades and communication tools.

PARTICIPATION/BEHAVIORAL EXPECTATIONS

Please review the core rules of netiquette for some guidelines and expectations on how to behave in an online learning environment.
GRADING POLICY

Grades:
Straight letter grades will be given as shown below.

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<thead>
<tr>
<th>Grade</th>
<th>Range</th>
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<tbody>
<tr>
<td>A</td>
<td>90-100%</td>
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<tr>
<td>B</td>
<td>80-89%</td>
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<tr>
<td>C</td>
<td>70-79%</td>
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<tr>
<td>D</td>
<td>60-69%</td>
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<tr>
<td>F</td>
<td>0-59%</td>
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Late assignments:
If you anticipate not being able to make a due date (for an assignment or an exam), notify the instructor before the due date with your reason (e.g., illness) to request an extended deadline. Extensions are at the discretion of the instructor and will be allowed at most twice per semester per student. If a deadline extension has not been granted, late assignments deductions will be 10% per day.

Make up exams:
Make-up exams are not allowed unless it is a University excused absence with proof of extenuating circumstances is provided (e.g., death in the family). Trips, weddings and other events are not excusable absences.

Grading questions/issues:
If you have any issues or questions about grades that are given on an assignment, please contact me within two weeks after the due date. Do NOT wait until the end of the semester to look at feedback on assignments or check for grading errors in Canvas.

ASSESSMENTS

Meeting deadlines:
As a student enrolled in this course, one of your responsibilities is to submit course work by the due dates listed in Canvas. As the instructor it is my responsibility to return your work in a timely manner with feedback. I will work to return all assignments and exams within 1 week or less. If, however, due to unforeseeable circumstances, the grading of your work takes longer than one week, I will let you know and make every effort to return your work as soon as I can.

Material availability:
The majority of course material (excepting exams) will be open throughout the semester, and you are welcome to work ahead. However, I intend to grade everyone’s assignments together, so if you turn in an assignment early, I will not grade it until after the posted due date.
Assignments:

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Points</th>
<th>Percent of grade</th>
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<tbody>
<tr>
<td>Quizzes x 15 (5 points each)</td>
<td>75</td>
<td>19</td>
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<tr>
<td>Discussions/Short answer questions x 7 (5 points each)</td>
<td>45</td>
<td>11</td>
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<tr>
<td>Scientific paper assignment x 2 (20 points each)</td>
<td>40</td>
<td>10</td>
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<tr>
<td>Midterm Exam</td>
<td>80</td>
<td>20</td>
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<tr>
<td>Student presentation</td>
<td>80</td>
<td>20</td>
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<tr>
<td>Final Exam</td>
<td>80</td>
<td>20</td>
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<tr>
<td><strong>Total</strong></td>
<td>400</td>
<td><strong>100</strong></td>
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*Keep a copy of all work created for the course, including work submitted through Canvas course learning management system.

**Quizzes:**
There are sixteen modules: 14 prepared by the instructor and two consisting of individual student contributions. Each module (excepting Module 16 on finals week) will have a quiz of 10 questions relevant to the material for that module. For modules 14 and 15, quiz questions will be based on final presentations and come from questions submitted by students.

**Discussion and short answer questions:**
There will be five discussions (via Canvas) of topics related to cannabis biology. Students are welcome but not required to discuss their thoughts on final student presentations. There will be two sets of short answer questions that are relevant to short scientific papers, submitted through Canvas.

**Scientific paper assignments:**
Students will be assigned a scientific paper to read, along with a set of questions about the content of the paper. Answers can be uploaded via Canvas. For these assignments and the exams, it may be helpful to type your answers into a word processing document and then copy and paste into the response boxes in canvas.

**Student Contributions:**
Students will prepare a presentation and upload it on Canvas (e.g. as a narrated PowerPoint slideshow saved as a video file). This contribution will be an overview of a scientific article that covers some aspect of cannabis biology. Please choose your article by the end of Module 9. The total for this assignment is worth 20% of the grade (see detailed rubric; Module 13 Assignment, Student Presentations). Each student contribution also includes the formulation of two quiz questions for the other students to answer (these will form the Module 14 & 15 Quizzes). In addition, each student will provide a brief review of two other student presentations.
Exams:
There will be two exams during the course, a mid-term and a final exam. The final exam will be comprehensive. The format of the exams are short/answer essay questions.

Extra credit:
I have included one extra credit quiz/survey at the end of the course which is designed to obtain student feedback and help me improve this course for the future. You will get credit for completing the quiz and your specific answers will in no way reflect on your grade. Other forms of extra credit will not be given.

Coffee Shop discussion forum:
Like the coffee shops of Amsterdam, this is a place to hang out, chat and ask questions. Students can provide topics for discussion or post interesting resources in the coffee shop (please keep them relevant to cannabis biology!). This is also a place for any broad questions for the instructor about course materials, content, etc.

Canvas Information & Technical Support
Canvas is where course content, grades, and communication will reside for this course.
- Login for Canvas
- Canvas Support
- For passwords or any other computer-related technical support, contact the Central IT Technical Support Help Desk.
  - (970) 491-7276
  - help@colostate.edu

The Technical Requirements page identifies the browsers, operating systems, and plugins that work best with Canvas. If you are new to Canvas quickly review the Canvas Student Orientation materials.

Academic Integrity & CSU Honor Pledge
This course will adhere to the CSU Academic Integrity/Misconduct policy as found in the General Catalog and the Student Conduct Code.

Academic integrity lies at the core of our common goal: to create an intellectually honest and rigorous community. Because academic integrity, and the personal and social integrity of which academic integrity is an integral part, is so central to our mission as students, teachers, scholars, and citizens, I will ask that you affirm the CSU Honor Pledge as part of completing your work in this course.

Further information about Academic Integrity is available at CSU’s Academic Integrity - Student Resources.
UNIVERSAL DESIGN FOR LEARNING/ACCOMMODATION OF NEEDS

I am committed to the principle of universal learning. This means that our classroom, our virtual spaces, our practices, and our interactions be as inclusive as possible. Mutual respect, civility, and the ability to listen and observe others carefully are crucial to universal learning.

If you are a student who will need accommodations in this class, please contact me to discuss your individual needs. Any accommodation must be discussed in a timely manner. A verifying memo from The Student Disability Center may be required before any accommodation is provided.

The Student Disability Center (SDC) has the authority to verify and confirm the eligibility of students with disabilities for the majority of accommodations. While some accommodations may be provided by other departments, a student is not automatically eligible for those accommodations unless their disability can be verified and the need for the accommodation confirmed, either through SDC or through acceptable means defined by the particular department. Faculty and staff may consult with the SDC staff whenever there is doubt as to the appropriateness of an accommodative request by a student with a disability.

The goal of SDC is to normalize disability as part of the culture of diversity at Colorado State University. The characteristic of having a disability simply provides the basis of the support that is available to students. The goal is to ensure students with disabilities have the opportunity to be as successful as they have the capability to be.

Support and services are offered to student with functional limitations due to visual, hearing, learning, or mobility disabilities as well as to students who have specific physical or mental health conditions due to epilepsy, diabetes, asthma, AIDS, psychiatric diagnoses, etc. Students who are temporarily disabled are also eligible for support and assistance.

Any student who is enrolled at CSU, and who self-identifies with SDC as having a disability, is eligible for support from SDC. Specific accommodations are determined individually for each student and must be supported by appropriate documentation and/or evaluation of needs consistent with a particular type of disability. SDC reserves the right to ask for any appropriate documentation of disability in order to determine a student’s eligibility for accommodations as well as in support for specific accommodative requests. The accommodative process begins once a student meets with an accommodations specialist in the SDC.

THIRD-PARTY TOOLS/PRIVACY

Please note that this course may recommend that you use third-party tools (tools outside of the Canvas learning management system), such as YouTube, Zoom or others. Some of these tools may collect and share information about their users. Because your privacy is important, you are encouraged to consult the privacy policies for any third-party tools in this course so that you are aware of how your personal information is collected, used and shared.
UNDocumented Student Support

Any CSU student who faces challenges or hardships due to their legal status in the United States and believes that it may impact their academic performance in this course is encouraged to visit Student Support Services for Undocumented, DACA & ASSET for resources and support. Additionally, only if you feel comfortable, please notify your professor so they may pass along any additional resources they may possess.

Title IX/Interpersonal Violence

For the full statement regarding role and responsibilities about reporting harassment, sexual harassment, sexual misconduct, domestic violence, dating violence, stalking, and the retaliation policy please go to: CSU Policy: Title IX Sexual Harrasment.

If you feel that your rights have been compromised at CSU, several resources are available to assist:

- Student Resolution Center, 200 Lory Student Center, 491-7165
- Office of Equal Opportunity, 101 Student Services, 491-5836

A note about interpersonal violence: If you or someone you know has experienced sexual assault, relationship violence and/or stalking, know that you are not alone. As instructors, we are required by law to notify university officials about disclosures related to interpersonal violence. Confidential victim advocates are available 24 hours a day, 365 days a year to provide support related to the emotional, physical, physiological and legal aftermath of interpersonal violence. Contact the Victim Assistance Team at: 970-492-4242.

Religious Observances

CSU does not discriminate on the basis of religion. Reasonable accommodation should be made to allow individuals to observe their established religious holidays. Students seeking an exemption from attending class or completing assigned course work for a religious holiday will need to complete the Request Form at least one full week prior to the event.

Once turned in, the Division of Student Affairs will review the request and contact the student accordingly. If approved, the student will receive a memo from the Dean of Students to give to their professor or course instructor.

Students are asked to turn in the request forms as soon as the conflict is noticed. Similarly, unanticipated conflicts requiring a religious observance, such as a death in the family, can also be reviewed.
CSU PRINCIPLES OF COMMUNITY

Inclusion: We create and nurture inclusive environments and welcome, value and affirm all members of our community, including their various identities, skills, ideas, talents and contributions.

Integrity: We are accountable for our actions and will act ethically and honestly in all our interactions.

Respect: We honor the inherent dignity of all people within an environment where we are committed to freedom of expression, critical discourse, and the advancement of knowledge.

Service: We are responsible, individually and collectively, to give of our time, talents, and resources to promote the well-being of each other and the development of our local, regional, and global communities.

Social Justice: We have the right to be treated and the responsibility to treat others with fairness and equity, the duty to challenge prejudice, and to uphold the laws, policies and procedures that promote justice in all respects.

DIVERSITY AND INCLUSION

The About webpage of the Vice President for Diversity includes a comprehensive statement of CSU’s commitment to diversity and inclusion.