Biology of Food: an environmental biology perspective

College of Charleston, Department of Biology

Fall 2021

What are our class meeting times? → Lecture: Tu/Th 1215-130 Room 154 RITA

Credit: 3 credit course

Dr. Courtney Murren (she/her)

Where to contact me? → e-mail: murrenc@cofc.edu

Office: RITA 227, No office phone.

Department phone: 843-953-5504

Student office hours: Thursday 1030-1130 via Zoom link on Oaks, and by appointment.

Special Topics: 250 Prerequisites: 111+L/112+L or 101/102+L or transfer credit of one year of biology. Or permission of instructor

Special Topics: 453 Prerequisites: 111+L 112+L and Biology 211+D or Biology 213+D or permission of instructor

Weekly required reading: Current readings will be selected from diverse scholarly sources and information will be posted on OAKS

Learning objectives

This course is intended to be an introduction to the biology of human food from species interactions to global processes and conservation. More specifically in this course you will:

• Explore topics of how the food we eat relates to the biology of the world, from the perspective of the environment
• Explore mechanisms or processes including genetics, physiology, ecology, life history of food
• Explore species interactions (pollination, mycorrhizae, parasites, pests, biocontrol) of food
• Explore topics including biogeography, aquaculture/mariculture, wild foraging or fishing/hunting
• Explore concepts behind breeding and harvesting approaches
• Explore global variation in major and minor crops
• Apply concepts in the context of climate change.

Learning outcomes

At the end of this course students will be able to:

• To critically read and discuss literature on the biology of food and assemble themes from across the globe.
• To understand major themes on the environmental biology of food from life cycles, to species interactions, to diverse ecological genetics methods
• To critically analyze and utilize data to solve problems in everyday life, including interpreting and creating graphs and maps related to these topics
• This course seeks to promote further interest in biology, as well as foster greater understanding of the diversity of the global culinary world.

Each week we will start the week with an overview of the topic and collaborative problem sets in class. The second class period of the week will include discussion of primary literature with attention to bringing in voices from around the globe and distinct perspectives on environmental biology of food. We will also discuss scientific communications in venues such as reports, blogs, and long form magazine articles. We will have occasional invited guests. Information about Thursday readings will be found on OAKs – see below for tips on reading preparation.

Week 1: Tuesday, August 24, 2021 & Thursday, August 26, 2021 Intro to human food & environmental biology, readings/discussion

Week 2: Tuesday, August 31, 2021 & Thursday, September 2, 2021 Wild caught food and life cycles. Readings/discussion

Week 3: Tuesday, September 7, 2021 & Thursday, September 9, 2021 Domestic crops, wild relatives and escaped weeds. Wheat & Corn. Readings/discussion

Week 4: Tuesday, September 14, 2021 & Thursday, September 16, 2021 GMOs and genetic modifications- modern and classic. Readings/discussion

Week 5: Tuesday, September 21, 2021 & Thursday, September 23, 2021 Genetics of crops: from the diversity of Brassica to marker assisted trait selection. Readings/discussion

Week 6: Tuesday, September 28, 2021 & Thursday, September 30, 2021 Parasites, Pests, Pathogens and how organisms survive, GUEST

Week 7: Tuesday, October 5, 2021 & Thursday, October 7, 2021 Biogeography of food. Rice, beans and fish. Readings/discussion Mid-term exam due on Oaks.

Week 8: Tuesday, October 12, 2021 & Thursday, October 14, 2021 Beverages1: Wine, Beer, and Kombucha. Readings/discussion


Week 10: Tuesday, October 26, 2021 & Thursday, October 28, 2021 Sauerkraut, pickles, kimchi, yogurt – microbes in and keeping microbes out Readings/discussion

Week 11: Tuesday, November 2, 2021 & Thursday, November 4, 2021 Algae, Crickets, Spice, & Herbs & TH GUEST
Week 1: Tuesday, November 9, 2021 & Thursday, November 11, 2021. Wild pollinators & agroecology
Readings/discussion

Week 12: Tuesday, November 9, 2021 & Thursday, November 11, 2021. Wild pollinators & agroecology

Week 13: Tuesday, November 16, 2021 & Thursday, November 18, 2021 Mariculture & Aquaculture. GUEST.

Week 14: Tuesday, November 23, 2021 Climate change and food
Thursday, November 25, 2021 THANKSGIVING BREAK NOV 24-28

Week 15/16: Tuesday, November 30, 2021 & Thursday, December 2, 2021, December 6, Student Book presentations

*The syllabus is subject to change. Any changes will be announced in class or via OAKS if there are campus closures due to weather and any other campus-wide policy changes. Assignment due dates are listed above to be submitted on OAKS.

Important campus-wide dates:

➢ Storm Make up dates (mark your calendars): Sept 25, 26, Nov 6,7 Use of these dates is announced campus-wide.
  o If these storm-dates are used for CofC learning time, in this course we will employ a-synchronous on-line interaction.
➢ Last day to Add/Drop: Aug 30
➢ Last day to W: Oct 29
➢ Last day of classes: Dec 6

Midterm exam: Take home style, due Thursday October 7.


Project: Supermarket botany to examine the biodiversity of plants.

Book project: Choose a first and second choice book from list of titles shared by Dr. Murren. Obtain Dr. Murren approval for your choice. Obtain a copy of the book and read throughout the term. Book project will include a written paper and an oral presentation.

Discussion preparation: discussion questions submitted before the start of class.

**Course requirements & Course Points**

<table>
<thead>
<tr>
<th>Activity</th>
<th>Points</th>
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<tbody>
<tr>
<td>Take home exams (mid-term &amp; final)</td>
<td>200</td>
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<tr>
<td>Quizzes (almost weekly on OAKS)</td>
<td>100</td>
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<tr>
<td>Discussion preparation, participation and synthesis</td>
<td>150</td>
</tr>
<tr>
<td>Book project (scholarly writing)</td>
<td>100</td>
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<tr>
<td>Book Presentations</td>
<td>50</td>
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<tr>
<td>Supermarket Botany</td>
<td>50</td>
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**Total points:** 650 Pts
453 students additional learning: Lead/facilitate discussion of instructor selected readings, prepare summary sheet for students. Prepare two additional papers (15 scholarly references, 2 pages of text, ~800 words each) on a topic related to the class, list of suggested topics will be provided. Take home mid-term and final will have additional questions at a higher Bloom level for synthesizing materials. **(250 additional points to be earned)**.

**Late policy.** Late work will be deducted 5% per day. Many activities are built upon each other. My goal is to get feedback to you before your next assignments. Communicate. Unusual situation, quarantine/isolation/hospitalization? We will work out a plan for maintaining steady continued progress in the course. This is not automatic, will be case specific, and requires you to contact me in a timely manner.


**Class Courtesies:** You belong here. So, do **each** of the registered students in our course. Please show respect for their time and ideas. Bring your enthusiasm! It is contagious.

**Computers:** Computers are required for this course.

**Electronics policy:** Computers are required and welcome. Their use is intended for only course content. Cell phones may be out when anticipated news of emergencies (e.g. weather alerts or anticipated Cougar Alert updates). Contacted for personal emergency during class? Please respectfully step out of the classroom and return after your call/text. Texting/messaging is distracting to all class participants.

**Google Drive** will be used for sign-up sheets, and sharing problem sets and other ‘hand outs’. Links will be in Oaks and shared during class.

**Late policy:** Late work will be accepted, with a 5% penalty per day. Should there be extenuating circumstances please contact me for accommodations.

**Attendance policy:** Materials are unique to this course. Quiz material will be from readings, class problem sets and lecture material. Miss lecture class? get notes from a colleague. Visit student office hours. Miss due to COVID read on...

**Additional course policy:** Masks are required on campus. I am fully vaccinated. Consider vaccine if you are medically able and booster shots as recommended by health professionals. Should you be isolated or quarantined, the solution for our course will be for attendance will be case specific and whether a Tu or Th class meeting time. **Please email me prior to the start-time of class so I prepare the necessary technology.** See below: for other longer-term accommodation needs or severe illness. It is possible that I or someone in my household may also fall ill via a breakthrough case. In such a situation, we will follow the policy above and temporarily switch to a Zoom/Oaks based format. Any changes will be posted on Oaks.

**Provost’s and Academic Task Force statement for face to face courses when students are quarantined/isolated due to Covid-19:** If one or more students are absent for an extended period of time due to COVID-19 (quarantine or isolation), instructors may, at their discretion, conduct the class exclusively online via OAKS for the duration of student quarantine/isolation, record class lessons to share with students, or choose an alternate accommodation that provides the impacted student(s) with
the opportunity to continue in the course. The specific accommodation will vary depending on the number of students affected, the expected duration of their absence, and the needs of the class.

*Masks, desk wiping, and social distancing will be practiced in our class as well as other policies as updated on the Vax to the Bricks plans.*

**Campus Safety policies:** Campus wide there is a mask policy. This requires a covering over nose and mouth at all times in class. Science lab-classroom policy is no eating or drinking during class.

*If you are ill, please do not physically come to class. Please report cases to Student health for contact tracing. Link: [https://studenthealth.cofc.edu/covid-19-updates/index.php](https://studenthealth.cofc.edu/covid-19-updates/index.php)*

Please contact me before class for health-based accommodations – as which meeting (Tu or Th) will have distinct accommodation and technology for me to prepare for the accommodation.

Testing clinics and vaccine clinics are regularly announced via email and on the student health webpage above. Please consider participating in regular testing.

**Inclement weather and storm make up days:** Inclement weather regularly influences fall semesters. Please stay alert for announcements via the CoF system. I will update specifics for our course on Oaks. Storm make up days are posted on the academic calendar.

**Honor code:** We will follow the CoF Honor Code in this course. Academic integrity is a campus value. ([https://deanofstudents.cofc.edu/honor-system](https://deanofstudents.cofc.edu/honor-system)).

**Americans with Disabilities Act:** All persons in this course with disabilities are entitled to access, support and reasonable accommodations. More CoF information at: [https://disabilityservices.cofc.edu/](https://disabilityservices.cofc.edu/)

**Extra Credit/Scholarly Engagement**

Attend a professional seminar presentation on campus and write a summary. Topics related to the course will be announced. These extra credits are a token to encourage general campus/civic scholarly involvement. To receive credit, you must hand in a typed 5+ sentence summary of the seminar that you participated in which also includes a description of what you learned from this seminar. In general, a seminar summary will be worth about 3 points of extra credit. Biology departmental seminars are online at noon on Mondays via Zoom. Climate seminars are on Friday at noon. Other related seminars across campus will be announced. **Alternative extra credit:** Participate in one of the campus agricultural club activities (Lucy Davis coordinator) on downtown campus or at Stono Preserve – times throughout the semester. Information will be posted on OAKS.
Academic Integrity Statement (3.12):

Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when suspected, are investigated. Each incident will be examined to determine the degree of deception involved.

Incidents where the instructor determines the student’s actions are related more to misunderstanding and confusion will be handled by the instructor. The instructor designs an intervention or assigns a grade reduction to help prevent the student from repeating the error. The response is recorded on a form and signed both by the instructor and the student. It is forwarded to the Office of the Dean of Students and placed in the student’s file.

Cases of suspected academic dishonesty will be reported directly by the instructor and/or others having knowledge of the incident to the Dean of Students. A student found responsible by the Honor Board for academic dishonesty will receive a XXF in the course, indicating failure of the course due to academic dishonesty. This status indicator will appear on the student’s transcript for two years after which the student may petition for the XX to be expunged. The F is permanent.

Students can find the complete Honor Code and all related processes in the Student Handbook at: http://deanofstudents.cofc.edu/honor-system/studenthandbook/.

Accommodations for Students with Disabilities (3.11; choose one):

1. Any student eligible for and needing accommodations because of a disability is requested to speak with the professor during the first two weeks of class or as soon as the student has been approved for services so that reasonable accommodations can be arranged. Center for Disability Services/SNAP.

2. The College will make reasonable accommodations for persons with documented disabilities. Students should apply for services at the Center for Disability Services/SNAP located on the first floor of the Lightsey Center, Suite 104. Students approved for accommodations are responsible for
notifying me as soon as possible and for contacting me one week before accommodation is needed.

3. This College abides by section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act. If you have a documented disability that may have some impact on your work in this class and for which you may require accommodations, please see an administrator at the Center of Disability Services/SNAP, 843.953.1431 or me so that such accommodation may be arranged.

OAKS (3.10)

OAKS, including Gradebook, will be used for this course throughout the semester to provide the syllabus and class materials and grades for each assignment, which will be regularly posted.

Inclement Weather, Pandemic or Substantial Interruption of Instruction (3.8)

If in-person classes are suspended, faculty will announce to their students a detailed plan for a change in modality to ensure the continuity of learning. All students must have access to a computer equipped with a web camera, microphone, and Internet access. Resources are available to provide students with these essential tools.

Weather closure:
Over the last decade, nearly every fall we have an altered syllabus due to campus closures due to weather.

If the College of Charleston closes and members of the community are evacuated due to inclement weather, students are responsible for taking course materials with them in order to continue with course assignments consistent with instructions provided by faculty. In cases of extended periods of institution-wide closure where students have relocated, instructors may articulate a plan that allows for supplemental academic engagement despite these circumstances. We will work together for safety and to ensure continued learning in our course. To achieve these aims, as power, internet and cellular service allow, I will stay in email communication.

Continuity of Learning

Due to social distancing requirements, this class will include a variety of online and technology enhanced components to reinforce continuity of learning for all enrolled students. Before the drop/add deadline, students should decide whether the course plan on the syllabus matches their own circumstances. [followed by instructor’s detailed plan]

Recording of Classes (via ZOOM or other applications by Dr. Murren)
Class sessions may be recorded via both voice and video recording. By attending and remaining in this class, the student consents to being recorded. Recorded class sessions are for instructional use only and may not be shared with anyone who is not enrolled in the class. Recordings will only be made available to particular students for particular accommodations.

**Mental & Physical Wellbeing:**

At the college, we take every student's mental and physical wellbeing seriously. If you find yourself experiencing physical illnesses, please reach out to student health services (843.953.5520). And if you find yourself experiencing any mental health challenges (for example, anxiety, depression, stressful life events, sleep deprivation, and/or loneliness/homesickness) please consider contacting either the Counseling Center (professional counselors at [http://counseling.cofc.edu](http://counseling.cofc.edu) or 843.953.5640 3rd Robert Scott Small Building) or the Students 4 Support (certified volunteers through texting "4support" to 839863, visit [http://counseling.cofc.edu/cct/index.php](http://counseling.cofc.edu/cct/index.php), or meet with them in person 3rd Floor Stern Center). These services are there for you to help you cope with difficulties you may be experiencing and to maintain optimal physical and mental health.

**Food & Housing Resources:**

Many CofC students report experiencing food and housing insecurity. If you are facing challenges in securing food (such as not being able to afford groceries or get sufficient food to eat every day) and housing (such as lacking a safe and stable place to live), please contact the Dean of Students for support ([http://studentaffairs.cofc.edu/about/salt.php](http://studentaffairs.cofc.edu/about/salt.php)). Also, you can go to [http://studentaffairs.cofc.edu/student-food-housing-insecurity/index.php](http://studentaffairs.cofc.edu/student-food-housing-insecurity/index.php) to learn about food and housing assistance that is available to you. In addition, there are several resources on and off campus to help. You can visit the Cougar Pantry in the Stern Center (2nd floor), a student-run food pantry that provides dry-goods and hygiene products at no charge to any student in need. Please also consider reaching out to Professor Murren if you are comfortable in doing so.

**College of Charleston Statement on Religious Accommodation for Students**

(Faculty/Administration Manual VIII.A.10): Please see attached campus-wide Statement of Accommodation.

**Inclusion:**

The College of Charleston offers many resources for LGBTQ+ students, faculty and staff along with their allies.

- [Preferred Name and Pronoun Information & On Campus Gender Inclusive facilities](http://studentaffairs.cofc.edu/student-food-housing-insecurity/index.php)
- [Campus Resources & College of Charleston Reporting Portals](http://studentaffairs.cofc.edu/student-food-housing-insecurity/index.php)
- [National Resources for Faculty & Staff](http://studentaffairs.cofc.edu/student-food-housing-insecurity/index.php)
- [GSEC Reports](http://studentaffairs.cofc.edu/student-food-housing-insecurity/index.php)
- [Documenting LGBTQ Life in the Lowcountry](http://studentaffairs.cofc.edu/student-food-housing-insecurity/index.php) (CofC Addlestone Library Special Collections Project)
- [College of Charleston Quality Enhancement Plan (QEP)](http://studentaffairs.cofc.edu/student-food-housing-insecurity/index.php)
- [Articles about CofC and LGBTQ+ Issues](http://studentaffairs.cofc.edu/student-food-housing-insecurity/index.php)