8-31-2022: Completely finished and calendar is all up to date! Please let me know if you find any errors, especially in the calendar! It is very detailed so definitely check it out!

**Syllabus – Fall 2022**

**BIOLOGY 111 sec. 16: Intro. To Cell and Molecular Biology**

**(CRN 13980)**

**ONLINE, asynchronous**

**INSTRUCTOR:**

Mrs. Kathleen E. Janech, M.S.

janek@cofc.edu

(email is the best way to reach me – please make sure to use your CofC email only!) I do my best to reply the same day if the email is received before 5 p.m., but I do not check my emails after 5 p.m. or over the weekend. Also, please include your **course number and section number**, and don’t email my husband by mistake!

**OFFICE LOCATION:** 65 Coming St., Rm. 214 (I am on the second floor of this little beige house, just across Coming St. from the loading dock area of RITA).

**STUDENT HOURS (in person):** Tuesdays and Thursdays **1:35 - 2:35 p.m. ET**

These are optional, and feel free to drop-in to my office (see location above) at any time during the hour, and stay for only as long as you need to. You are also welcome to email me to schedule an appointment at another time or location, including a Zoom meeting, if that is your preference. **Please come by, introduce yourself and ask questions! I am here to help!**

**Course Description**

This course is intended to be a foundation course for science majors, providing an introduction to basic principles of biology and emphasizing the concept of structure and function in biological systems at the molecular and cellular levels. By the end of this course, you should also be actively aware of many of the intricate connections between the study of biology and chemistry.

**Supplemental Instruction (SI):**

Supplemental Instruction, or SI, is a collaborative, peer-assisted group study session, led by a student who has previously successfully completed the course. The SI leader helps students, in weekly sessions outside of class, to develop strategies in order to successfully master the material. More info. can be found at the [Center for Student Learning](https://www.cofc.edu/student_learning)! The SI instructor for this class is **Hannah Savage (savagehg@g.cofc.edu)**. Session times
and locations will be announced during class. **Attending at least one session each week is highly recommended.**

**Co-requisites**

BIOL 111 Laboratory – you **MUST** enroll in a lab section in addition to this lecture.

**Required Course Materials**

1. **Textbook:** *Biological Science* by Freeman, et al., 7th Edition (Pearson Publishers), with the 2 newts on the cover. You can buy it (hardcover, loose-leaf version or digital), rent it, borrow it, or share it with a classmate, but you **MUST** have access to this textbook! Use the text and figures to preview and to reinforce what you are learning in class. There are self-quizzes that can be great study guides, as well as a variety of web links to help you understand the material. There is a lot of material to cover in this course, so **keep up with the reading!** Course ID for the digital version is **JANECH09975**

2. **Computer and online access:** All students must have access to a computer equipped with a web camera, microphone, and Internet access. **You will be required to download, install and use Respondus Lockdown Browser and Monitor for ALL quizzes and, possibly, some exams, including the Final Exam. Prof. Janech will be providing further instructions about this.** Resources are available to provide students with these essential tools if they need assistance - please let me know if you need help accessing those resources. *****This is especially important since I am trying to run the course as smoothly as possible, even with the pandemic, and might also be necessary if there are any issues with inclement weather this semester.***** This class will include a variety of online and technology enhanced components to reinforce continuity of learning for all enrolled students, including recorded Zoom lectures.

Online access through MyPortal to OAKS ([Getting Started | OAKS Support](#)) and Voice Thread (through the OAKS course home page) will be essential. You also must regularly check your CofC email, since that is how I will send updates. A helpful website for all things technology at CofC is **Student Instructional Technology Services:** [Student Instructional Technology Services](#)  **IT also has a chat feature for technology support:** [Remote Support Portal](#)  The Remind app will also be used as a backup communication resource.

**Suggested Course Material**

**Center for Student Learning** – I encourage you to utilize the Center for Student Learning (CSL) and their academic support services for assistance with study strategies and course content. They offer tutoring, Study Skills appointments, and workshops that help students of all abilities become more successful throughout their academic career. Services are available to you at no additional cost. For more information, please visit the CSL website at [http://csl.cofc.edu](http://csl.cofc.edu), or call (843) 953-5635, or drop by their location on the first floor of the Addlestone Library.

**Class Delivery Format**
This course is being presented in an **asynchronous** format - you will be able to watch and listen to the assigned class Zoom recordings in weekly modules, and read the corresponding sections of the textbook, when it is most convenient for you and at your own pace. You are not required to login to the course at a specific time each day to interact with your classmates or me. There will be quizzes and exams that have specific due dates and times, and these will be posted in the course calendar. Please keep in mind that **this course format requires students to be self-motivated, disciplined, organized and task-driven.** Some students are under the impression that online classes are easier than traditional face-to-face classes. This is not true. In fact, online courses are often more challenging than traditional classes and you should be prepared to spend several hours on this class each week, including additional time on the weekends. It is critical that you complete work for this class each day and not wait until the day before a deadline to begin working on a module. ALL work for this course will be online - watching and listening to recorded Zoom lectures and taking your own notes, completing quizzes and exams, and submitting Flipgrids.

This format requires that, for the duration of the course, you have regular access to a computer with a microphone and web-cam, coupled with a reliable high-speed internet connection. **Computer failure/unavailability does not constitute an excuse for not completing work by the due dates.** So please do not wait until the last minute to complete work for a module, or a quiz or exam.

This class will be administered through OAKS, the College of Charleston’s learning management system ([Getting Started | OAKS Support](http://myportal.cofc.edu)). To access OAKS go to [http://myportal.cofc.edu](http://myportal.cofc.edu) and login. The OAKS icon is the acorn located in the upper righthand corner of the screen. I highly recommend setting up OAKS notifications for yourself, so that the system will send you alerts when items are posted in the course or due dates arise.

If you have any issues with technology, the College offers a number of resources to help you develop your technological competency in general, and specifically within the context of this class. A helpful website for all things technology at CoC is **Student Instructional Technology Services:** [Student Instructional Technology Services](http://studenttech.cofc.edu). Also, IT has a chat feature to help you with problems: [Remote Support Portal](http://www.cofc.edu/studenttech/remote Support.html) And, if you experience technological problems during the class, please contact me immediately at janechk@cofc.edu.

Since we are not meeting face-to-face for class, I expect YOU to regularly login to the course on OAKS and take notes on the Zoom lecture recordings in the modules as you watch and listen to them, as well as look for course updates (in the News section on the course homepage), and complete quizzes and exams by their due dates. Please also check your College of Charleston email regularly, for notifications and updates. You are also responsible for accessing all posted course material in a timely manner, so that you do not get behind.

The College anticipates that some members of the community will fall ill or test positive for the coronavirus, and then be required to isolate in place, thereby missing class, assignments, and assessments. Faculty are expected to provide reasonable accommodations as determined by the content, level, and expectations of their courses for students who become ill or indicate a need to isolate themselves. **Communication with the instructor will be essential so that alternate plans can be arranged, and it is imperative that, even if ill or in difficult circumstances, the student finds a way to communicate in a timely manner.** To the extent possible, arrangements will be made for students with COVID-19 related absences to continue in the class. Faculty are encouraged to make explicit in their syllabus what sorts of accommodations students can expect with respect to missed course meetings, assignments, and assessments. However, students should be aware that extended absences for any reason cannot be accommodated in every course. Missed assignments and assessments may result in poor or failing grades. If a student is absent from class for an extended period, a withdrawal (W) before
the deadline should be strongly considered. In all cases, assigning course grades is the responsibility of the instructor consistent with the grading policy published in the syllabus.

**Inclement Weather, College Closure, and the Class Schedule**

If the College of Charleston closes and members of the community are evacuated due to inclement weather or for any other reason, students are responsible for taking course materials with them in order to continue with course assignments consistent with instructions provided by faculty. Communication with me, either via email or the Remind app, is vital so that adjustments can be made for extremely difficult circumstances. 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.

**How to Take This Course**

*(with credit & thanks to, and in memory of, Dr. Conseula Francis)*

Any course, in any given semester, is a journey, often to a place you haven't been before. You may be super excited about the trip, eager to get going and explore the sites. Or maybe you are here because you were told to take this course. Or maybe you are somewhere in-between. Imagine, if you will, that we’re all standing at the base of a mountain. We all have to decide how we’re going to climb it, and you alone can decide the manner of your exploration.

<table>
<thead>
<tr>
<th>Day Hiker</th>
<th>Backpacker</th>
<th>Trailblazer</th>
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<tbody>
<tr>
<td>You’re sticking to the trail because you’re certain of where it goes. You want the basics - lists, order of processes, details to memorize. There is nothing wrong with this approach, especially if the material is new to you. A successful day hiker will take notes while watching and listening to the recorded Zoom lectures, read all related pages in the book after class, review their notes regularly &amp; use the textbook for definitions and background information. A day hiker may do well on quizzes, but they will have to dig a little deeper for exams to really understand the connections between all aspects of the material. They will use the resources at the Center for Student Learning (CSL), and be familiar with activities that can help them to incorporate Bloom’s Taxonomy of human cognition as they work toward greater understanding.</td>
<td>You're ready to spend a few days on this mountain and you have supplies (prior knowledge, interest, inclination) to help you. You have a grasp of the basics, and are ready to explore beyond them. Backpackers will hone their note-taking skills while watching and listening to the recorded Zoom lectures, read all related pages in the book so they can ask questions about anything that is not clear, and really spend time digesting all of the information that is contained in the figures in the textbook. They ask questions of the professor, either during student drop-in hours at the office, by email or by requesting a Zoom meeting. Backpackers know that to succeed, they must approach with effort and learn and grow from their mistakes. They work with resources at the Center for Student Learning (CSL), are working to achieve the higher orders of understanding in Bloom’s Taxonomy of human cognition, and practice</td>
<td>You are blazing your own way, finding new routes up the mountain and new connections between all aspects of the material, things others may not see. You are passionate about, and interested in, not only the what and the why, but also the how does this connect to other things in the bigger picture? Trailblazers often use different colors when taking notes while watching and listening to the recorded Zoom lectures. They often read related parts in the textbook, because they really want to understand the whole picture. They study the figures and try to draw them on their own for recall practice and mastery. They ask questions and spend a lot of time with the material. For trailblazers, this course is part of the expedition to discover all that science has to offer. They take advantage of EVERY opportunity to learn from their mistakes. They often make</td>
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</table>
recalling material from memory. use of resources at the Center for Student Learning (CSL), actively work with the material to achieve the higher orders of understanding in Bloom's Taxonomy of human cognition. They often quiz themselves and those that they study with, because they know that practicing information recall from memory as often as possible is one of the best ways to learn.

No matter which path you choose, remember that all explorers need to do their best to limit outside distractions. Yes, life happens, and can be challenging, but really try to give your brain the gifts of time and focus - try to find a good work space and a routine that works for you.

**Course Policies and Requirements**

**Accommodations**

Any student in this class who has a documented disability should speak to me as soon as possible, as well as contact the Center for Disability Services (CDS/SNAP program), located on the first floor of the Lightsey Center, Suite 104, Disability Services, (843) 953-1431, SNAP@cofc.edu

Additionally, students are welcome to contact Prof. Janech to discuss any religious accommodations needed.

**Discrimination & Harassment**

CofC is committed to providing an environment free of all forms of prohibited discrimination, including sexual harassment and violence (i.e. sexual assault, domestic and dating violence, and gender or sex-based bullying and stalking). If you have experienced any form of discrimination or harassment, help and support are available. Please be aware that CofC employees, other than designated confidential resources, are expected to report information they receive about prohibited discrimination, including sexual harassment and sexual violence. This means that if you tell me about a situation involving sexual harassment, sexual violence, discrimination, or harassment, I must share the information with the Title IX Coordinator. You may speak to someone confidentially by contacting the Office of Victim Services at 843-953-2273, Counseling and Substance Abuse Services at 843-953-5640, or Student Health Services at 843-953-5520.

**Assignment**

One homework assignment will be assigned during the semester. This assignment is intended to reinforce material covered in class and to encourage critical thinking. It will require you to seek information from sources outside of class and in addition to your textbook. Due date is given on the course calendar below. **Because of the assignment and other REAL opportunities to EARN credit in this course, I do not offer any extra credit projects.** All students are expected to turn in their assignment by the assigned time on the due date. An assignment will lose one full letter grade for every day of delay (**any time after the assigned time counts as the next day**). You should hold onto all graded assignments until the final grade has been turned in.
**Honor Code**

Students are required to adhere to the guidelines outlined by the Honor Board in the Student Handbook (please see [Honor Code and Code of Conduct - College of Charleston](#)). This includes lying, which will not be tolerated in this course. All work that you turn in for this course (whether for assignments, quizzes, or exams) must be your own independent scholarship. Students should be aware that unauthorized collaborating—working together without permission—is a form of cheating; this includes collaborating with classmates or other individuals on online quizzes or exams. Other forms of cheating include possessing or using an unauthorized study aid (which could include accessing information via a cell phone or computer), copying from others’ exams, fabricating data, and giving unauthorized assistance. Any form of plagiarism (intentional and unintentional), cheating, or presenting someone else's work as one's own will be treated as a serious academic transgression and will be communicated accordingly by the instructor as an honor code violation to Student Affairs. Be especially cautious of plagiarism when using Internet sources. Cheating, attempted cheating, or plagiarism will result in a grade of zero on that quiz or exam and may result in a final overall grade of F or XXF (failure due to academic dishonesty) for the course.

**Quizzes**

Weekly quizzes will be given throughout the semester on OAKS. They are intended to assist students in keeping up with the large amount of information in this course. **It is your responsibility to keep up with due dates and times!** Most of the quizzes will require the use of Respondus Lockdown Browser and Monitor. **Quizzes will open at least one or two days before the day that they are due, and close at 5 p.m. on the day that they are due!** A missed quiz will result in a 0 for that quiz, unless you talk to me to explain the situation (serious illness, including but not limited to COVID-19, family responsibilities, other extreme circumstances). It is imperative that you communicate with me directly and tell me the truth, so that I can work with you. Your 2 lowest quiz scores will be dropped in the final grade calculation. All cell phones, smart watches, headphones, ear buds, iPods, iPads, other tablets or laptops, etc. are to be turned off and put away during each quiz, and you are expected to take them BY YOURSELF without other people, notes, books or websites. The use of any wireless communication device during a quiz, test, or final exam is a violation of the Honor Code.

**Exams**

In this course, there are 4 regular exams scheduled during the semester (see calendar below for dates) and 1 cumulative final exam scheduled during the final examination period. **Due to the online nature of this course, all exams will be given online through OAKS.** All exams will require the use of Respondus Lockdown Browser and Monitor. **Exams will open a day or two before the day that they are due, and close at 5 p.m. on the day that they are due!** Anyone who misses an exam will receive a 0, **UNLESS** you talk to me ASAP to explain the situation (serious illness, including but not limited to COVID-19, family responsibilities, other extreme circumstances) - if you email/talk to me about it, I am willing to open the regular exam back up for you to take it (you will not be able to earn higher than a C, but this is better than a 0) but this must be done within a week from the original due date (this does NOT apply to the final exam!). If you do not contact me within 1 week, then the 0 will remain as your grade. It is imperative that you communicate with me and tell me the truth, so that I can work with you. If you have any conflicts with the scheduled exams, you must talk to me ahead of time, well before the exam date. All cell phones, smart watches, headphones, ear buds, iPods, iPads, other tablets or laptops, etc. are to be turned off and put away completely during each exam.
are expected to take all exams BY YOURSELF - no other people, books, notes or websites. The use of any wireless communication device during a quiz, test or final exam is a violation of the Honor Code.

Grading

The quizzes will count for a total of 15% of your final grade. The assignment will count for 10% of your final grade. The 4 regular exams will count for a total of 60% of your final grade. The cumulative final exam will count for 15% of your final grade. Grade calculation formula (try for yourself in an Excel spreadsheet):

\[
[(\text{Quiz avg.}) \times 0.15] + [(\text{Assign.}) \times 0.10] + [(\text{Exam avg.}) \times 0.60] + [(\text{Final exam score}) \times 0.15] = \text{Final grade.}
\]

Letter grades will be determined by the following breakdown:

\[
\begin{align*}
\geq 93\% & = A \\
90-92 & = A- \\
87-89 & = B+ \\
83-86 & = B \\
80-82 & = B- \\
77-79 & = C+ \\
73-76 & = C \\
70-72 & = C- \\
67-69 & = D+ \\
63-66 & = D \\
60-62 & = D- \\
\leq 59 & = F \\
\end{align*}
\]

The following quote is just a reminder that whether you come into this course with lots of prior knowledge or not, work on your part will be the key to your success!

"Hard work beats talent when talent doesn’t work hard" - Tim Notke

Please teach yourself how to check on your grade in this course on OAKS, and follow along during the semester. Any errors can be brought to my attention, and are much easier to fix the sooner they are detected!

My Expectations of Students in my class:

1. **Proper Deportment:** In this class, you are expected to be respectful of your teacher and other students. I know that we are all online and not in a classroom together, but in any emails or communications or in-person or Zoom student hours, please be patient and courteous. If you have a question, please ask me – I love questions from students!

2. **Electronic device policy:** Research has shown that learning is negatively affected when students and those around them use phones or other devices during class. Therefore, because we all deserve a learning-focused environment, the use of wireless communication devices during class is prohibited, other than to respond to a Cougar Alert announcement - therefore please SILENCE all cell phones, pagers, iPods, iPads, tablets, laptops and anything with alarms before coming into my class AND PUT THEM AWAY. Yes, I know that you will be on your own with this one, but give yourself a serious opportunity to do your best. Set yourself up for success by finding a good workspace, and try to develop a consistent working routine.

3. I will try my best to learn all of your names, even though we are remote. It is important that you start presenting yourself as a serious, professional student when dealing with faculty and other students in the class. **One day you will be asking for letters of recommendation – start thinking now about what you want those letters to say about you, and act accordingly.**

4. **Lockdown Browser and Monitor reminders:** Lockdown Browser and Monitor (LDB) is required to be used to take each numbered quiz and exam in OAKS. This is done to assist you, and ALL students in the class, with
abiding by the Honor Code in an online testing environment. The LDB software will record video and audio of you while you are taking the quiz or exam, and it uses artificial intelligence to flag suspicious behavior. **NO ONE will be “watching” you while you are testing.** The system alerts me when behavior is flagged, and I can go in to see and hear what happened. If you know that something out of your control happened during the recording, you are welcome to email me and let me know once you are done testing. If I do not find evidence of ACTUAL suspicious behavior (for example, the system said it could not detect your face when all that happened was your mouth and nose were covered by a mask), then I will note that and you will not hear anything from me. **However, if I do see or hear suspicious behavior, there will be the following consequences:** 1. For the first incidence, you will receive a warning email from me, and an expectation that the behavior will not happen again. 2. If you are flagged a second time for suspicious behavior, after already receiving a warning, then 10 points will be deducted from your grade for that quiz or exam. 3. If you are flagged a third time, you will receive a grade of 0 for that quiz or exam. **More details will be forthcoming and posted on OAKS.**

**COURSE CALENDAR**

*(module schedule and Quiz & Exam closing dates are firm – but topics covered in certain modules are subject to change)*

<table>
<thead>
<tr>
<th>Module</th>
<th>Weekly Topic</th>
<th>Due Date</th>
</tr>
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<tbody>
<tr>
<td><strong>Module 1</strong></td>
<td>Welcome, Introduction to Cells, start Prokaryotes</td>
<td>Opens: Tues. 8/23 at 4 p.m EDT</td>
</tr>
</tbody>
</table>
| | Prokaryotic and Eukaryotic Cell Structure, Microscopes  
*(Last day for Drop/Add is Monday, Aug. 29th!)* | Quiz 1 closes: Mon. 8/29 at 5 p.m. EDT |
| | Related chapter sections in the textbook: 1.1, 1.2, 1.3, 1.5, 7.1, 7.2, Bioskill 9, p. 36 & 37 | |
| **Module 2** | Eukaryotic Cell Structure – (drawing activity), Start Cell Membranes & Transport, Diffusion & Osmosis, Channels & Carriers | Opens: Tues. 8/30 at 4 p.m EDT |
| | Related Chapter sections in the textbook: 7.2, Ch. 12 p. 258, 7.3 p. 158, 7.5 p. 161, Ch. 27 p.562-563, Ch. 4 p. 99, 7.6, 6.3, 6.4 | Quiz 2 closes: Mon. 9/5 at 5 p.m. EDT |
| **Module 3** | Pumps, Cell to Cell connections, Atoms, Bonding, Properties Water | Opens: Tues. 9/6 at 4 p.m EDT |
| | Related Chapter sections in the textbook: 6.4, parts of 11.1, 11.2, 2.1, some in 2.2 | Quiz 3 closes: Mon. 9/12 at 5 p.m. EDT |
| EXAM | ***Exam 1*** over material in Modules 1, 2 & 3 (see study guide posted on OAKS) | Opens: Tues. 9/13, NOON EDT  
Closes: Wed., 9/14, 5 p.m. EDT |
|---|---|---|
| Module 4 | Acids, Bases & pH, Organic molecules - Functional Groups, start macromolecules: Proteins  
**Related Chapter sections in the textbook:** Finishing 2.2, 2.5, 2.3 (some), 3.1 | **Note the shift!**  
Opens: Thurs. 9/15 at 4 p.m. EDT  
Quiz 4 closes: Wed. 9/21 at 5 p.m. EDT |
| Module 5 | Macromolecules: finish Proteins, Nucleic Acids  
**Related Chapter sections in the textbook:** 3.1, 3.2, 3.3 (some), prions p. 90-91, 4.1, 4.2, little bit of 4.3 | Opens: Thurs. 9/22 at 4 p.m. EDT  
Quiz 5 closes: Wed. 9/28 at 5 p.m. EDT |
| Module 6 | Macromolecules: Carbohydrates, Lipids, Cell to Cell Communication  
**Related Chapter sections in the textbook:** 5.1, 5.2, Chapter 26 p. 544, 6.1, 6.2, some from 11.3, Fig. 46.4 on p. 989 | Opens: Thurs. 9/29 at 4 p.m. EDT  
Quiz 6 closes: Wed. 10/5 at 5 p.m. EDT |
| EXAM | ***Exam 2*** over material in Modules 4, 5, & 6 (see study guide posted in OAKS) | Opens: Thurs., 10/6, NOON EDT  
Closes: Fri., 10/7, 5 p.m. EDT |
| Module 7 | Energy & Redox, start Enzymes, Cellular Respiration stage 1 - Glycolysis  
/ **Midterm grades available Fri., Oct. 14th**  
**Related Chapter sections in the textbook:** 2.3 (some), 8.1 (some), 8.2, Ch. 10 Fig. 10.1 p. 215, Ch. 5 Fig. 5.8 p. 118, 8.3 through 8.4 (p. 182-188) on Enzymes on VT on your own (potentially), 9.1, 9.2, 8.5 | **Note the shift again!**  
Opens: Tues. 10/11 at 4 p.m. EDT  
Quiz 7 closes: Mon. 10/17 at 5 p.m. EDT |
| Module 8 | Cellular Respiration stages 1-3 - Glycolysis, Pyruvate Processing and the Citric Acid Cycle, Cellular Respiration, stage 4 - Oxidative Phosphorylation with the ETC, start Photosynthesis  
**Related Chapter sections in the textbook:** 9.3, 9.4, 9.5, video link on OAKS, 10.1 | Opens: Tues. 10/18 at 4 p.m. EDT  
Quiz 8 closes: Mon. 10/24 at 5 p.m. EDT |
| Module 9 | Photosynthesis and Fermentation  
**Related Chapter sections in the textbook:** 10.1, 10.2, 10.3, 10.4 (just about carbon fixation and rubisco), 10.5, 9.6 / **Bio. Assign. Due Thurs. Oct. 27th, posted to Flipgrid by 11:30 p.m. / Fri., Oct. 28th is the last day for students to withdraw from a class with a grade of “W”** | Opens: Tues. 10/25 at 4 p.m. EDT  
Quiz 9 closes: Mon. 10/31 at 5 p.m. EST |
| EXAM | **Exam 3** over Modules 7, 8 & 9 (see study guide posted in OAKS) | Opens: Tues., 11/1 NOON  
Closes: Wed., 11/2 at 5 p.m. EST |
| Module 10 | Mitosis, Cancer, start Meiosis  | Related Chapter sections in the textbook: Ch. 12 prokaryotic fission p. 267, 12.1 (just what I cover), 12.2, Word doc worksheet with beads, End of Ch. 12.3 (G1 and G2 checkpoints), Ch. 12.4 (just what I cover), Fig. 19.12, p. 399, Ch. 13.1, Voice Thread over Meiosis covering 13.1 & 13.3 | Note the shift again!  
(And we are now back on Eastern Standard Time as of Nov. 7)  
Opens: Thurs. 11/3 at 4 p.m. EST  
Quiz 10 closes: Mon. 11/14 at 5 p.m. EST |
| OFF | Happy Fall Break! Please VOTE on Tues. | No Classes Mon., Nov. 7 or Tues., Nov. 8 |
| Module 11 | Finish Meiosis and do bead activity with worksheets, Start Genetics with Mendel, vocabulary, Single character and Monohybrid crosses, Double character and Dihybrid crosses PLUS a little more from Zoom recording on Tues. Nov. 22 | Related Chapter sections in the textbook: 13.2, 14.1, 14.2, 14.3, Punnett square video | Opens: Tues.. 11/15 at 4 p.m. EST  
Quiz 11 closes: Mon. 11/21 at 5 p.m. EST  
(this is your last quiz!) |
| OFF | Happy Thanksgiving!!! | OFF - Wed., Nov. 24, through Fri., Nov. 26 |
| EXAM | **Exam 4** over Modules 10 & 11 (see study guide posted in OAKS) | Opens: Tues., 11/29 at NOON EST  
Closes: Wed., 11/30 5 p.m. EST |
| Thurs. Dec. 1 | Last day of class for this course! Finish genetics, Central Dogma | Part of 14.5, parts of Ch. 16.2, 16.3, 16.4 |
| Mon. Dec. 5 | Official last day of classes for the fall semester |
| Tues. Dec. 6 | Reading Day - catch up and study! |
| Wed. Dec. 7 | Final exams begin - Study and take your final exam on OAKS! | I will open the Final Exam on OAKS at NOON today! |
| Fri. Dec. 9th | FINAL CUMULATIVE EXAM on OAKS will be due by 5 p.m. TODAY! It will close and not reopen. |

** Please note: as stated in the Undergraduate Catalog:  
[http://catalog.cofc.edu/content.php?catoid=14&navoid=671#final-examinations](http://catalog.cofc.edu/content.php?catoid=14&navoid=671#final-examinations)  
Examinations must be taken at the time scheduled, except when:  
1. Two or more exams are scheduled simultaneously.  
2. Legitimate AND documentable extenuating circumstances prevent the student from completing the examination at the scheduled time (e.g., burial services for an immediate family member) Note: Forms for requesting permission to reschedule one exam may be found on the Student Academic Forms channel on the Academic Services tab on MyCharleston. Written permission of the instructor and all relevant signatures must be obtained at least 24 hours prior to the scheduled time for the final examination.**
Make it a habit to always check out your final exam schedules:

CONCEPTS AND APPLICATIONS IN BIOLOGY I & II
BIOL 101 & 101L/BIOL 102 & 102L
Department: Biology

Learning Goals & Objectives

This general education science course provides a background for understanding and evaluating contemporary topics in biology and societal/environmental issues. Students develop a general understanding of core concepts and develop the critical competencies that form the bases for the practice of science and use of scientific knowledge.

Core Concepts

This 2-semester course sequence in general biology addresses fundamental principles in biology which broadly include:

· Evolution: The diversity of life evolved over time by processes of mutation, selection, and genetic change. The theory of evolution by natural selection allows scientists to understand patterns, processes, and relationships that characterize the diversity of life.

· Structure and Function: Basic units of structure define the function of all living things. Structural complexity, together with the information it provides, is built upon combinations of subunits that drive increasingly diverse and dynamic physiological responses in living organisms. Fundamental structural units and molecular and cellular processes are conserved through evolution and yield the extraordinary diversity of biological systems seen today.

· Information flow, exchange and storage: The growth and behavior of organisms are activated through the expression of genetic information at different levels of biological organization and depend on specific interactions and information transfer.

· Pathways and transformation of energy and matter: Biological systems grow and change by processes based upon chemical transformation pathways and are governed by the laws of thermodynamic and will be explored to understand how living systems operate, how they maintain orderly structure and function, and how physical and chemical processes underlie processes at the cellular level (i.e. metabolic pathways, membrane dynamics), organismal level (i.e. homeostasis) and ecosystem level (i.e. nutrient cycling).

· Biological systems: Living systems are interconnected and interacting and biological phenomena are the result of emergent properties at all levels of organization, from molecules to ecosystems to social systems. The course will explore the dynamic interactions of components at one level of biological organization to the functional properties that emerge at higher organizational levels.

These ideas are explored from the perspective of the following topics in each course:
BIOL 101 & 101L
Core Competencies

- Nature of Scientific Knowledge
  - Understand the intellectual standards used by scientists to establish the validity of knowledge, evidence, and decisions about hypothesis & theory acceptance? These standards include: 1) science relies on external and naturalistic observations, and not internal convictions. 2) scientific knowledge is based on the outcome of the testing of hypotheses and theories that are under constant scrutiny and subject to revision based on new observations 3) the validity of scientifically generated knowledge is established by the community of scientists through peer review and open publication of work.

  - Understand that new ideas in science are limited by the context in which they are conceived; are often rejected by the scientific establishment; sometimes spring from unexpected findings; and usually grow slowly, through contributions from many investigators.

  - Understand that science operates in the real world as defined by the laws of chemistry and physics.

  - Understand the differences between and relations among a scientific theory, hypothesis, fact, law, & opinion.
Understand the differences between science and technology but also their interrelations.

Understand the dynamic (tentative) nature of science.

Scientific Methods of Discovery
- Understand the methods scientists use to understand the natural world (observing; questioning; formulating testable deductive hypotheses; controlled experimentation when possible; observing a wide range of natural occurrences and discerning (inducing) patterns.)

Apply physical/natural principles to analyze and solve problems.

Developing a Scientific Attitude
- Develop habits of mind that foster interdisciplinary and integrative thinking (within biology; between biology and other sciences; between science and other disciplines)

Develop an appreciation for the scientific attitude—a basic curiosity about nature and how it works.

Developing scientific analysis and communication skills
- Develop quantitative reasoning skills (quantitatively expressing the results of scientific investigations, or patterns in nature and using knowledge of biological concepts to explain quantitatively expressed data or patterns).

Understand the probabilistic nature of science and the use/application of inferential statistics to test hypotheses.

Develop scientific information literacy (library, internet, databases etc...); finding and evaluating the validity of science-related information.

Communicate scientific knowledge, arguments, ideas in a variety of different contexts (scientific, social, cultural) and utilizing a variety of different media (scientific articles, policy statements, editorials, oral presentations etc...).

Develop cooperative problem-solving skills (working effectively in teams), but also habits of mind and skills that foster autonomous learning.

Develop an appreciation for the impact of science on society.
- Develop an appreciation of humans as a part of the biosphere and the impact of biological science on contemporary societal/environmental concerns.

Knowledge of the history of the biological sciences and the influences of politics, culture, religion, race, and gender on the scientific endeavor.

Signature assignments for measuring learning outcomes
Learning Outcome 1: Students apply physical/natural principles to analyze and solve problems.
This learning outcome is assessed using the poster (or scientific article) generated in Biology 102 lab as part of the multi-week student-directed independent research project. In this project students use ecological data they collect (or which has been collected in actual research investigations) to test an ecological hypothesis of
their choosing. This multi-week project begins with students becoming experts in various areas of ecological sampling. Students, working in small research teams, decide on a question they would like to explore. Teams then develop a research proposal to test their hypothesis. Students collect (or use already collected data), summarize and analyze the data, and draw conclusions.

Learning Outcome #2 - Students demonstrate an understanding of the impact that science has on society. BIOL 102 lab students produce a written document (examples - policy statement, article, stake-holder professional letter or poster) which requires them to research and apply biological knowledge or evidence to defend or critique a proposed solution to a biology-related societal issue. Although the choice of the specific issue or proposed solution is course-section specific, some examples of potential issues include

- exploring environmental/health impacts of genetically modified organisms
- the epidemic of diabetes in the United States
- solutions for mitigating global climate change


[1] This learning goal is measured as part of the general education assessment. The specific learning outcome to be measured is: Students apply physical/natural principles to analyze and solve problems.
[2] This learning goal is measured as part of the general education assessment. The specific learning outcome to be measured is: Students demonstrate an understanding of the impact that science has on society.