Concepts in Biology
BIOL 101
Spring 2021
Course Syllabus
TR 9:25-10:40 Zoom

Professor: Matthew E. Rhodes, Ph.D
Email: rhodesme@cofc.edu
Office Phone: (843) 953-8087
Office: 119 RITA
Office Hours: W 2:00-3:30, R 11:00-12:30 and by appointment
I will do my best to respond to all e-mails within one business day.
Feel free to schedule virtual meetings outside of office hours.

Required Texts and Materials:
Text Book: Biology Concepts and Applications, 10th Edition
Cecie Starr, Christine Evers, Lisa Starr
Copyright year: 2018
CENGAGE

Web Component: CENGAGE Mindtap
See instructions for how to enroll at end of syllabus.
It’s probably cheapest to purchase directly from CENGAGE
Access and ebook/hard copy can be purchased at the bookstore as well.

Computers and Headsets: This course will be online and synchronous. You must show up to class every session with a working computer and microphone (for group work). For exams we will be using the lockdown browser with video so you should have a compatible computer and webcam.

Co-requisite: BIOL 101L

Teaching/Class Philosophy:
One crazy semester down. Hopefully only one more to go. I am cautiously optimistic that we will be able to return to a relatively normal learning environment for the fall semester. In the meantime, we will make due as best we can. Remaining engaged in an online class is difficult, even more so when it is a large class and a 75-minute time block. We will attempt to break up each synchronous online class period with creative group assignments and student participation. I also would appreciate your input on what biologically related topics are of particular interest to you.

For some of you this may be your first science class in years and one of two you will take at CofC. For others, perhaps we can convert you to becoming science/biology majors. Regardless, my goal for the class is twofold:
1) To introduce you to and to provide you with the background to understand the general principles of biology with a focus on the cellular, molecular, and genetic aspects.
2) To educate ourselves on biologically relevant topics affecting the world and our lives. To facilitate the background info, we will be adhering relatively closely to the material covered in the textbook. For the special topics, I have no particular agenda. I welcome suggestions for topics and supplemental readings that are particularly important to you. For example, topics can include:

1) The impacts of climate change
2) Vaccines
3) Are we alone in the Universe/
4) Cancer treatments
5) Etc.

I can’t promise that we will cover every suggested topic. The more relevant a topic is to the material covered in the course and to the world events, the more likely it is to be chosen.

Finally, it is my personal opinion that we learn best when we see the material in multiple ways. We will start by pre-class readings and online Mindtap assignments. Then we will cover the material in class with a combination of lecture, videos, and group work. Next, we will read supplemental readings that apply or elaborate on the basics covered in the textbook and class. Lastly, there will be exams which will necessitate studying and review.

**Grade Composition:**

<table>
<thead>
<tr>
<th></th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exams: (3x 100)</td>
<td>300pts or 46% (15.3% each)</td>
</tr>
<tr>
<td>Final Exam</td>
<td>150 pts or 23%</td>
</tr>
<tr>
<td>In-Class/At home Assignments</td>
<td>120pts or 19%</td>
</tr>
<tr>
<td>Mindtap Assignments</td>
<td>40pts or 6%</td>
</tr>
<tr>
<td>Participation/Attendance</td>
<td>40pts or 6%</td>
</tr>
</tbody>
</table>

**Total (650pts)**

**Exams**
Three in-class (1.25-hour) exams will be given on scheduled dates. The exams will be taken “synchronously” online using a lockdown browser and webcam (Make sure you have the necessary technology available). The exams will consist of a variety of matching, fill-in-the-blank, multiple choice, multiple selection questions, etc. The exam material will primarily focus on the material covered since the preceding exam, but applicative questions of cumulative material may appear.

Make-up exams are purely at my discretion and are reserved for extreme circumstances only. Contact me as soon as possible if you think you will or if you have missed an exam. No make-ups will be administered after a 48-hour period. See other attendance policies.

**Final Exam**
A single final exam will be comprehensive and will count for 23% of the lecture grade. The final exam grade can NOT be dropped and makeup will be offered only under particularly extreme circumstances.

**Mindtap Assignments**
For each chapter of Biology Concepts and Applications 10th ed. a Mindtap assignment will be posted. These must be completed through Mindtap prior to the lecture during which that chapter will be discussed (Mindtap Assignments will generally be due by 9am the day of class). This is to assure that you have read the material and are prepared for class. Personally, I wish this had been around when I was a student. Mindtap assignments will be graded P/F. Your lowest 2 reading assignments will be dropped from your grade.

**Supplemental Readings**
A variety of supplemental readings will be posted on OAKs for each class. These readings will vary in length and complexity. They range from newspaper articles to podcasts to Ted talks. They will be pivotal for in class assignments, discussion boards, homeworks, and content from the readings will appear on exams. The goal of the supplemental readings (SRs) is to expose you to recent and/or particularly fascinating (in my opinion) discoveries and controversies in biology. You will notice on the class schedule that for the last 1/3 or so of the course the SRs are yet to be determined. Should something pique your interest and you would like to delve into it further please reach out, or if you have a suggested reading.

**In Class Assignments/Homeworks**
Throughout the semester there will be semi-regular in class assignments/homeworks based on classwork and supplemental readings. Sometimes you will be working in small groups and sometimes individually. Sometime these be turned in at the end of the class period, sometimes they will be started in class and finished at home, and sometimes solely at home. They will be graded for completion. I will periodically spot check to make sure submissions consist of reasonable work. You can miss 1 ICA/HW without penalty.

**Participation**
As the class will be online, attendance and participation will be assessed differently. Attendance and participation will be monitored via a combination of responses to Poll Everywhere questions, discussion boards, and logging in to zoom. Due to the current environment, the excused absence policy will be rather lenient. However, to get credit for ICA’s/Poll Everywhere’s for the day you must inform me ahead of time if your absence is foreseeable or as soon as possible afterwards if it is not.

For discussion groups on the Supplemental Readings, you will be divided up into groups of 8, and every student will be expected to post in the discussion group for each supplemental reading. At a minimum your post should make it obvious that you read the SR and are responding intelligently to any previous posts by your peers. Ideally the SR will pique your interest and you will respond in an original and insightful manner.

You may have up to 2 unexcused absences. With the coronavirus running rampant, every effort will be made to accommodate excused absences, however an excess of excused absences may necessitate an incomplete.

**Extra-Credit**
Extra-credit opportunities are entirely up to me and will be relatively minor. IF an extra-credit opportunity is provided it will be provided to the entire student body, (ie no individual extra-credit assignments). These potential extra-credit assignments will be announced in class and are not presented in the syllabus’ grade computation.

**Syllabus/Schedule Modifications**
This syllabus/schedule most likely will change as the semester progresses depending. I will do my best to adhere to the syllabus as written, but changes will be at my discretion and I will announce any changes both during class and through OAKS. Make sure you stay up to date on any modifications. You should also notice a flex day built-in to the schedule. I anticipate that we will move slightly slower through material than on the syllabus and I will adjust the schedule accordingly. I will make every effort to keep exams on the scheduled dates.

**Letter Grade Schedule**
It is my expectation that A’s are earned with considerable hard work and effort. B’s represent above average work. C’s are average fluency of the material. And my hope is that nobody get’s a D or an F. Generally speaking, grades in my classes are distributed as roughly 1/3 A’s, 1/3 B’s, 1/3 C’s, and a rare D or F. It is my intention that the ICA/HW’s, Mind tap assignments, and participation points will raise everybody’s grade.
<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Numerical Range (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>93.0 – 96.9</td>
</tr>
<tr>
<td>A -</td>
<td>90.0 – 92.9</td>
</tr>
<tr>
<td>B +</td>
<td>87.0 – 89.9</td>
</tr>
<tr>
<td>B</td>
<td>83.0 – 86.9</td>
</tr>
<tr>
<td>B -</td>
<td>80.0 – 82.9</td>
</tr>
<tr>
<td>C +</td>
<td>77.0 – 79.9</td>
</tr>
<tr>
<td>C</td>
<td>73.0 – 76.9</td>
</tr>
<tr>
<td>C -</td>
<td>70.0 – 72.9</td>
</tr>
<tr>
<td>D +</td>
<td>67.0 – 69.9</td>
</tr>
<tr>
<td>D</td>
<td>63.0 – 66.9</td>
</tr>
<tr>
<td>F</td>
<td>0.00 – 62.9</td>
</tr>
</tbody>
</table>

**General Course Information:**
This is the first course of a two-semester sequence in introductory biology. The course begins by examining the definition and makeup of life. We will then look at the pathways both metabolic and genetic that are necessary to sustain life. In particular **Student Learning Outcomes** include:
1. The general properties of life including an understanding about how basic chemical and physical principles determine the limitations for life.
2. Cell form and function
3. Basic metabolism and photosynthesis
4. Mitosis and Meiosis
5. Mendelian Genetics
6. Describe the varied nutritional types of bacteria at the elementary level.

In the course of the two semester lab and lecture sequence students will achieve competency of the following **Core Competencies (Highlighted are Covered in BIOL 101):**

1. **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 contribution.

2. **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.

3. **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).
• 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.

4. Develop an appreciation for the impact of science on society.
• Develop an appreciation of humans as a part of the biosphere and the [2]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.

<table>
<thead>
<tr>
<th>Lecture #</th>
<th>Date</th>
<th>Topic</th>
<th>Assigned readings (read before class!)</th>
<th>Special Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12-Jan</td>
<td>Course Policies/Procedures What is Life?</td>
<td>Chapter 1.1 – 1.4</td>
<td>Are we alone?</td>
</tr>
<tr>
<td>2</td>
<td>14-Jan</td>
<td>The Elements of Life</td>
<td>Chapter 2.1-2.3 and Application pg 33 and SR1</td>
<td>Vaccines</td>
</tr>
<tr>
<td>3</td>
<td>19-Jan</td>
<td>Water and Carbon</td>
<td>Chapter 2.4-2.5 and 3.1 and SR2</td>
<td>Life in Acid</td>
</tr>
<tr>
<td>4</td>
<td>21-Jan</td>
<td>The Molecules of Life</td>
<td>Chapter 1.5 and Chapter 3.2-3.3 and SR3</td>
<td>TBD</td>
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<tr>
<td>5</td>
<td>26-Jan</td>
<td>The Molecules of Life 2</td>
<td>Chapter 3.4 and 3.5</td>
<td>Arsenic</td>
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<tr>
<td>6</td>
<td>28-Jan</td>
<td>Prokaryotic Cell Structure</td>
<td>Chapter 4.1 - 4.4 and SR5</td>
<td>Microscopy</td>
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<tr>
<td>7</td>
<td>2-Feb</td>
<td>Eukaryotic Cell Structure</td>
<td>Chapter 4.5 – 4.11 and SR6</td>
<td>Endosymbiosis</td>
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<tr>
<td>8</td>
<td>4-Feb</td>
<td>Prelude to Metabolism</td>
<td>Chapter 5.1 – 5.5 and Application pg 94 and SR7</td>
<td>Ethanol and Methanol</td>
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<tr>
<td>9</td>
<td>9-Feb</td>
<td>Exam 1</td>
<td>Chapters 1-4, and SR’s 1-6</td>
<td></td>
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<tr>
<td>10</td>
<td>11-Feb</td>
<td>Diffusion and Photosynthesis I</td>
<td>Chapter 5.6 – 5.8 and Chapter 6.1 and SR8</td>
<td>The Dead Sea</td>
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<tr>
<td>Week</td>
<td>Date</td>
<td>Topic</td>
<td>Chapters/Subjects</td>
<td>Notes</td>
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<tr>
<td>11</td>
<td>16-Feb</td>
<td>Photosynthesis II and Climate Change</td>
<td>Chapter 6.2-6.4 and SR9</td>
<td>Climate Change</td>
</tr>
<tr>
<td>12</td>
<td>18-Feb</td>
<td>Glycolysis and TCA Cycle</td>
<td>Chapter 7 Part I and SR10</td>
<td>TBD</td>
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<tr>
<td>13</td>
<td>23-Feb</td>
<td>Respiration and Fermentation</td>
<td>Chapter 7 Part II and SR11</td>
<td>The Early Earth</td>
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<tr>
<td>14</td>
<td>25-Feb</td>
<td>Intro to DNA</td>
<td>Chapter 8 Part I and SR12</td>
<td>Rosalind Franklin</td>
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<tr>
<td>15</td>
<td>9-Mar</td>
<td>Transcription and Translation</td>
<td>Chapter 9 Part I and SR13</td>
<td>TBD</td>
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<tr>
<td>16</td>
<td>11-Mar</td>
<td>Mutations</td>
<td>Chapter 9 Part II and SR14</td>
<td>Toxins</td>
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<tr>
<td>17</td>
<td>16-Mar</td>
<td>Exam 2</td>
<td>Chapters 5-8 and SRs 7-13</td>
<td>TBD</td>
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<td>18</td>
<td>18-Mar</td>
<td>Gene Expression</td>
<td>Chapter 10 Part I and SR15</td>
<td>TBD</td>
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<td>19</td>
<td>23-Mar</td>
<td>Metabolic Control</td>
<td>Chapter 10 Part II and SR16</td>
<td>Lactose Persistence</td>
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<td>20</td>
<td>25-Mar</td>
<td>Mitosis</td>
<td>Chapter 11 Part I and SR17</td>
<td>Cancer</td>
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<tr>
<td>21</td>
<td>30-Mar</td>
<td>Mitosis II</td>
<td>Chapter 11 Part II and SR18</td>
<td>Henrietta Lacks</td>
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<tr>
<td>22</td>
<td>1-Apr</td>
<td>Meiosis</td>
<td>Chapter 12 Part I and SR19</td>
<td>TBD</td>
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<tr>
<td>23</td>
<td>6-Apr</td>
<td>Mendelian Genetics</td>
<td>Chapter 13 Part I and SR20</td>
<td>TBD</td>
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<tr>
<td>24</td>
<td>8-Apr</td>
<td>Beyond Mendel</td>
<td>Chapter 13 Part II and SR21</td>
<td>TBD</td>
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<tr>
<td>25</td>
<td>13-Apr</td>
<td>Exam 3</td>
<td>Chapters 9-12 and SRs 14-20</td>
<td>TBD</td>
</tr>
<tr>
<td>26</td>
<td>15-Apr</td>
<td>Inheritance</td>
<td>Chapter 14 Part I and SR22</td>
<td>TBD</td>
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<tr>
<td>27</td>
<td>20-Apr</td>
<td>Chromosomal Abnormalities</td>
<td>Chapter 14 Part II and SR23</td>
<td>TBD</td>
</tr>
<tr>
<td>28</td>
<td>21-Apr</td>
<td>Biotechnology</td>
<td>Chapter 15 and SR24</td>
<td>TBD</td>
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</tbody>
</table>
IF you have a DISABILITY that qualifies you for academic accommodations, please provide a letter from Disability Services at the beginning of the semester. I will be happy to discuss your situation via zoom. For more information regarding accommodations, please contact the Office of Disability Services at (843)-953-1431, stop by their office in Lightsey Center Room 104 &/or refer to their web site at http://www.cofc.edu/~cds/ Any SNAP student must turn in their envelope at least 48 hours before the scheduled test.

The deadline for WITHDRAWAL from the course with a grade of "W" is Monday, March 22, 2021. In accordance with College regulations, withdrawal from the course after that date will be permitted only under dire and unpredictable circumstances, such as sudden serious illness and is largely out of my hands (see "Withdrawal from Courses" in the Undergraduate Catalog).

There will be three full-period TESTS based on lectures, texts, and assigned reading. Tests are tentatively scheduled for the following dates: February 9th, 2021, and March 16th, 2021, and April 13th, 2021

Expectations:

WORKLOAD:
As this class is 3 credits, it is expected that every week there will be approximately 9 hours of work/study/review outside of class or 4.5 hours per class. For every class there will be an online textbook reading assignment (on average 30 min – 1 hour), a supplemental reading (15min – 1 hour), discussion board (15 - 30 min), and homeworks or ICA to be finished (1 hour). The workload will vary and any remaining time should be spent reviewing material/filling out the study guide in preparation for the exams. The workload will most certainly be decreased the week of an exam.

COMMUNICATION:
With Each Other:
When working remotely and online there is the opportunity to abuse the anonymity. Rather than provide detailed guidelines, I’m just going to say act and treat each other with the same dignity as you would in person. For a more detailed considerations see this link http://blogs.onlineeducation.touro.edu/15-rules-netiquette-online-discussion-boards/ If you ever feel that someone’s online communication has made you feel uncomfortable, please bring it to my attention.

With Me:
I will be available for drop in virtual office hours during the times listed above. If you’d like to schedule additional meetings I will do my best to make myself available. I will likewise do my best to respond to all e-mails and relevant discussion board posts within one business day. You might find that a little man joins us for our meetings or his crying may interrupt us. For that matter, he may make an occasional appearance during class time as well.

I. College of Charleston Honor Code and Academic Integrity
Lying, cheating, attempted cheating, and plagiarism are violations of our Honor Code that, when identified, 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 a misunderstanding will handled by the instructor. A written intervention designed to help prevent the student from repeating the error will be given to the student. The intervention, submitted by form and signed both by the instructor and the student, will be forwarded to 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 grade 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. The student may also be placed on disciplinary probation, suspended (temporary removal) or expelled (permanent removal) from the College by the Honor Board.

Students should be aware that unauthorized collaboration--working together without permission-- is a form of cheating. Unless the instructor specifies that students can work together on an assignment, quiz and/or test, no collaboration during the completion of the assignment is permitted. 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.

Research conducted and/or papers written for other classes cannot be used in whole or in part for any assignment in this class without obtaining prior permission from the instructor.

Students can find the complete Honor Code and all related processes in the Student Handbook at [http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php](http://studentaffairs.cofc.edu/honor-system/studenthandbook/index.php)

Advice From Previous Students Who Have Taken This Course:

- Study, come to class, take notes and **ASK QUESTIONS**
- Stay on top of the notes/lectures. Don’t get behind. A LOT of info.
- Come to class. The powerpoints are great for refreshing but aren’t good enough.
- Pay attention to slides and the amount of time spent on one topic, its likely important.
- Focus on Slides! And take notes on the slides. The slides by themselves are not enough.
- **Study every night**
- Don’t take 17 credit hours like me. Be sure you have plenty of time to devote.
- Be ready to learn and have fun
- Need to study a lot
- Review each lecture slide in depth and use the book only as a resource to supplement. Reading relevant figures/legends was helpful.
- Do the chapter reading assignments before class and stay on your game!
- **Study your ass off!**
- Take good notes of the slides even though they are online. Listen to repeated subject matter.
- Read and reread not just on the exam week.
- Make sure to add notes from class to powerpoints.
- Concentrate on big ideas
- You get out of the class what you put into it
- To continually review notes
• NEVER miss lecture!
• Keep up on studying notes and pay attention to all tables
• Don’t skip class. Print off the slides before class to bring in
• Go to class!! Focus on powerpoints.
Institutional Statement

The College of Charleston is committed to promoting the health and safety of our campus community. To that end, all faculty and students must abide by public health guidelines that include practicing social distancing in the classroom and elsewhere on campus, following signage indicating the entrance, exit, and traffic flow in and around campus buildings, wearing a mask or cloth face covering while in the presence of others, washing or sanitizing hands frequently, sanitizing individual and shared learning and work spaces, and staying home when sick. These practices are mandatory. Students will not be allowed to attend class without an appropriate face covering or when showing symptoms of illness.

Due to social distancing requirements, the number of students allowed in the classroom at one time is significantly reduced. As a result, most in-person courses will include a variety of online and technology enhanced components to ensure continuity of learning for each student throughout the semester. These strategies will vary by course section and students are advised to read each syllabus carefully. Faculty have planned each course to enable all students, whether they are in the classroom or working remotely, to be fully engaged in the learning experience. Before the drop/add deadline, students should decide whether the course plan on the syllabus matches their own circumstance. All faculty will use OAKS to facilitate student access to the course syllabus, course materials, and the gradebook. The College of Charleston’s standard grading system is in effect.

There is a possibility that the semester will be disrupted by weather or the pandemic. Every course syllabus will include a plan for a change in modality to ensure the continuity of learning in the event in-person classes must be suspended. Regardless of the method of instruction, all courses will move online for one week after Thanksgiving. Final exams will be administered online. Therefore, 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.

The College anticipates that some members of the community will fall ill or test positive for the coronavirus, and then be required to quarantine 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. 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 on the syllabus.