

## **SPRING 2017, CofC's Biology 111-02, Introduction to Cell and Molecular Biology**

### **COURSE OBJECTIVES: BIOL 111 Introduction to Cell and Molecular Biology (3)**

A foundation courses for science majors emphasizing the concepts of structure and function in biological systems at the molecular and cellular levels. Topics include biochemistry, biochemical and molecular evolution, cell function, respiration, photosynthesis, genetics and molecular biology. Lectures three hours per week.

**Pre-requisites.** Note: BIOL 111, [BIOL 111L](#), [BIOL 112](#), [BIOL 112L](#) are prerequisites for all upper-division biology courses except for [BIOL 204](#) and [BIOL 209](#), which have no prerequisites.

**Co-requisite(s):** [BIOL 111L](#), unless students already have credits for the laboratory portion of the course.

### **STUDENT LEARNING OUTCOMES:**

1. Students will be able to identify the different biological molecules and their functions in living organisms
2. Students will become familiar with the diversity, structure, and function of cellular organelles
3. Students will comprehend how living organisms acquire energy from the environment and how energy is converted into different forms through processes of photosynthesis, cellular respiration, and fermentation
4. Students will demonstrate an understanding of cell division including both mitosis and meiosis
5. Students will demonstrate understanding of the basics of Mendelian genetics
6. Students will demonstrate an understanding of the mechanisms of DNA replication, RNA transcription, and RNA translation
7. Students will learn about cell communications between cells that are responsible for development of one cell to an organism, and its importance in normal cell and tissue maintenance and the breakdown of these communications in cancers.
8. Students will learn factual knowledge (terminology, classifications, methods, trends, and nearly a new language of biology).
9. Students will think and learn about applications of course material (to improve thinking, problem solving, and decisions)
10. Students will gain a real life-long appreciation about the applications of the classroom learned concepts and theories to practical biology that will promote a life-long passion of learning in as many possible students.

**MEETING TIME:** Monday, Wednesday, Friday; 8:30-9:20 AM in HWWE 213.

**INSTRUCTOR:** Dr. Richard Southgate, PhD at U. Geneva Switzerland, 1984

**E-MAIL:** [southgater@cofc.edu](mailto:southgater@cofc.edu), My response turnaround time with such emails will normally 24 hours on weekdays and within 48 hours on weekends.

**PHONE:** (843) 953-0340 (not very efficient), so e-mail is much better.

**OFFICE:** Harbor Walk West, HWWE 308.

**OFFICE MEETING HOURS (in HWWE 308) and your options:**

**a) Mon. 10:30am–12:30pm.**

I have a lab. from **Mon. 1:30 – 4:40pm** so I have to prepare this lab. before.

**b) Wed. 10:30am-1pm** or occasionally **Wed. 10:30 – 11:20 am** if I have to go to a faculty meeting in SSMB at noon (info. will be posted on OAKS and Top Hat.

- c) **appointment**, please e-mail me to set up a good time.  
d) **briefly after class (M, W, F)** but have another class at **9:30am**, so only a few minutes.

**Your Biol-111 Spring 2017 SI leader is: ASHLEIGH KIRKER, CofC '18,**  
[kirkeran@g.cofc.edu](mailto:kirkeran@g.cofc.edu), <http://csl.cofc.edu/supplemental-instruction/>.

She will help you actively comprehend the materials and grasp the concepts that are presented in the class room and the textbook for quizzes and exams. Many years of data have shown that students who regularly attend SI do a lot better in their exams. Visit the Center for Student Learning on the first floor of the Addlestone Library. There is a walk-in science tutoring lab. (<http://csl.cofc.edu/labs/science-lab/index.php>). \* Also go to their seminars and workshops on things like time management, note taking, effective studying, and test taking strategies (<http://csl.cofc.edu/study-strategies/workshops/index.php>). Many of the workshops are online (<http://csl.cofc.edu/study-strategies/workshops/online-workshops/index.php>) so you can watch them whenever you want.

### **COURSE WEBSITES:**

**OAKS:** Log on to My Charleston, click on OAKS, Click on this course. Click on CONTENT to see the homework assignments and lecture material posted after class. You can directly access OAKS at <https://lms.cofc.edu/>. <http://blogs.cofc.edu/oaks/students/tutorials/>

**OAKS** will be utilized for **content, news, announcements, updates, and online office hours.**  
**New to Oaks?** <http://blogs.cofc.edu/oaks/students/getting-started/>

**NEW: TOP HAT teaching platform transforms students into experts and profs (into heroes?)** – this posted on the site's comment, not mine. Its loved by ~500-plus colleges and universities around the world (and growing) and Top Hat Lecture helps **over 2,000,000 students** come to class every day. Better yet, it encourages and helps student participation with

- **Poll students & ask questions,**
- **Track attendance,**
- **Hold discussions (anonymous, or not),**
- **Capture student responses in real-time,**
- **Interactive content helps prevent fatigue.**
- **Gauging understanding.**

<http://www.tophat.com>, Course password: RS111Spring2017, Code/room #: 282240.

**TOP HAT will be used for attendance, quizzes, class discussions, quiz grades, etc.**

**Email (specific or bulk)** will be used to communicate important or sudden changes in course information in this semester. We will all also work hard together to build our classroom and online learning community.

### **REVIEWING CLASSROOM MATERIALS**

• Students should expect to dedicate MINIMAL 9 hours per week to get a good grade (3 hours in class and ~2 hours extra at home for each lesson) to get a good grade.

**Think this course (and all the others) as a job, which requires hard work and dedication to be successful.**

- This class is student-driven. Motivation must come from the student first with my help.
- Our class should be interactive and engaging but again it is up to you collectively.
- Students are expected to contribute to our learning community.
- There are weekly obligations: quizzes, discussions exams etc.
- **Procrastination will doom you, the course builds pretty quickly and if you are not on top, things can easily snowball.**

## **REQUIRED COURSE TEXTBOOK:**

**Biological Science by Scott Freeman et. al. Sixth Edition (Pearson Publishers).**

You can buy it, rent it, get the ebook, borrow it, or share it with a classmate, but you **MUST have access to this textbook! You will also need it for Biology 112 (and most likely Biology 211 if you are a Bio. major) so keep the book (as it is also a great reference book for all the later more advanced courses in the College).**

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 in the book, as well as a variety of web links to help you understand the material. So, there is a lot of material to cover in this course, so keep up with the reading and if get behind, definitely go to SI sessions (more the better) or see me (instructions above).

Also access to **MasteringBiology with the textbook/web site.**

## **SUGGESTED HELPER COURSE MATERIAL:**

**The Study Guide for Biological Science** by Freeman 6<sup>th</sup> Edition (Pearson Publishers).

**This is not required**, but it can be very helpful for many students.

## **HOW TO DO WELL IN THIS COURSE:**

Reading the text and attending lecture are required. This is a detail-oriented course and you will not do very well if you never read the book. If you must miss lecture, get the notes from another student in class but there will be a quiz at the beginning or end of +/- every class and you will have 3 excuses so after you will lose points (and this loss will be documented on Top Hat (see below).

### **• READ THE TEXT ASSIGNMENTS BEFORE LECTURE.**

#### **• Take notes during lecture!!!!**

• Within 1-2 days (before the next class, **best on the same day before you forget**), rewrite / consolidate your notes to incorporate the classroom teaching, textbook material, homework, and what you went over in supplemental instruction. This makes you **ACTIVELY learn the material**, and makes a huge difference in what you remember. **Repetition makes you a scholar but it takes time, effort and energy.** Just staring the screen is not good enough.

• When I was a student, I wrote everything I could and then overtime, wrote it on cards (OK that was a lot of years ago and no internet) with the goal to make a short list of a few cards that I repeated to myself just before the exam as I it was difficult to remember these facts/terms for a long time. Talk to yourself or to your friends to get that info into you head. In essence you have to use **several ways** to review the material. Just looking at the computer screen is not enough.

• When you study the book, answer the textbook questions that are in blue throughout the chapters.

• Come to class on time, every time. Normally our course would be at 8:00 am but the College added an extra 30 minutes so you could go to Harbor Walk. You will get a 4-point quiz question at the beginning or end of each lecture i.e. 30 quizzes. The question will be on something you learned in the last lecture or in the current class. You can also have non- graded questions in the same classroom activity as well.

• Do the homework discussions posted on Top Hat.

• Ask questions!

• Go to supplemental instruction (see above). These sessions meet several times per week with a schedule based on when students are available.

• Get a dedicated notebook for the class to stay organized.

**QUIZZES:** There is a brief quiz at the beginning/end of each lecture using Top Hat together with sometime attendance. The quizzes are based on the material from the last lecture or the current class and they encourage you to stay up to date on your studying, and to be on time for class.... On each quiz you can earn 4 points for getting the correct answer. As there will be 30 quizzes, the total sum will be 120 points. You can also earn an additional 20 extra credit points. Some of the quizzes will have a

question with a Top Hat question but no grade. This means you can gain 5 extra-credit questions @ 4 pts = 20 points, if you answer all the questions correctly. **THERE WILL BE NO MAKEUP QUIZZES.**

**EXAMS:** There will be 4 exams (32 @ 3 pts. and 1 @ 4 pts. questions, 100 points, 50 minutes) during the semester plus a cumulative final exam (150 points, using the same type of questions).

- Exams will be mainly multiple choice, true false and short answer questions.
- Exams are challenging and require you to know the details and think analytically.
- Exam material is based primarily on lecture, OAKS and Top Hat notes, discussions and reading from the relevant sections in the text.
- 10 discussion questions @ 10 pts. each will be based on selective readings or videos. and will be posted on Top Hat with notification also on OAKS.

**GRADES:**

**Top Hat Quizzes:** 120 pts. (~16.6% of the 770 pts.).  
**Exams:** 4 X 100 pts. = 400 pts. (13% per exam, sum = ~52%)  
**Final exam:** 150 pts. (~19.5%, many of the questions will be very similar to what you saw in the exams)  
**Top Hat Discussion questions:** 5 X 20 points = 100 pts. (~13%).

**Total: 770 pts. 120 + 400 + 150 + 100 pts.**

Depending on the classes progress, there may some extra credit points in the exams. You cannot make up exams without a valid excuse approved by the Office of Student Affairs. **You will receive a zero if you miss an exam without a valid excuse and there will be no makeup exam.**

**Your final grade is determined as a percentage of the 770 total points in this class:**

<b>A</b> 93-100	<b>C</b> 73-76	<b>B</b> 83-86	<b>D</b> 63-66
<b>A-</b> 90-92	<b>C-</b> 70-72	<b>B-</b> 80-82	<b>D-</b> 60-62
<b>B+</b> 87-89	<b>D+</b> 67-69	<b>C+</b> 77-79	<b>F</b> 0-59

This is a **TENTATIVE SCHEDULE** for multiple reasons and actual class topics may change. I may spend more time on one concept and make up on others.

	<b>DATE</b>	<b>LECTURE TOPIC</b>	<b>TEXT CHAPTERS</b>
<b>W</b>	<b>11-Jan</b>	<b>1 Introduction,</b>	<b>1, 7.1</b>
<b>F</b>	<b>13-Jan</b>	<b>2 Introduction 2</b>	<b>2</b>
<b>W</b>	<b>18-Jan</b>	<b>3 Intro. Cell theory and Prokaryotes</b>	<b>2</b>
<b>F</b>	<b>20-Jan</b>	<b>4 Chemistry and Chemical Bonds</b>	<b>2</b>
<b>M</b>	<b>23-Jan</b>	<b>5 Chemical Bonds 2, pH and water</b>	<b>2, 8.1-8.2</b>
<b>W</b>	<b>25-Jan</b>	<b>6 Thermodynamics</b>	<b>6.1-6.3</b>
<b>F</b>	<b>27-Jan</b>	<b>7 Lipids</b>	<b>6.1-6.3</b>
<b>M</b>	<b>30-Jan</b>	<b>8 Membranes, diffusion and osmosis</b>	<b>3</b>
<b>W</b>	<b>01-Feb</b>	<b>9 Proteins</b>	<b>6.4</b>
<b>F</b>	<b>03-Feb</b>	<b>10 Passive and Active transport across membranes</b>	<b>6.4</b>

M	06-Feb	11 Enzymes	8.3-8.5
W	08-Feb	EXAM 1: Cell theory - Active Transport	
F	10-Feb	12 Oxidation-Reduction Reactions	8.2, 9
M	13-Feb	13 Respiration	9
W	15-Feb	14 Respiration	9
F	17-Feb	15 Respiration	9
M	20-Feb	16 Photosynthesis	10
W	22-Feb	17 Photosynthesis	10
F	24-Feb	18 Carbohydrates	5
M	27-Feb	19 Cell Structure and Function-eukaryotes	7
W	01-Mar	20 Cell Structure and Function-eukaryotes	7
F	03-Mar	EXAM 2: Enzymes - Cell Structure and Function	11
		SPRING BREAK MAR 6 – 12	
M	13-Mar	21 Cell to cell interactions	12
W	15-Mar	22 Cell cycle	
F	17-Mar	23 Mitosis	12
M	20-Mar	24 Mitosis and * Meiosis	12, 13
W	22-Mar	25 * Meiosis	13
T	23-Mar	Last day for students to withdraw with a grade of "W" from full semester classes.	
F	24-Mar 26	26 * Genetics 1	
M	27-Mar	27 * Genetics 2	
W	29-Mar	28 * Genetics 3	
F	31-Mar	29 Nucleic acids and Polymerization	4
M	03-Apr	30 DNA replication	
W	05-Apr	EXAM 3: Cell interactions – Nucleic Acids	15
F	07-Apr	31 DNA Replication	15
M	10-Apr	32 Transcription	16, 17
W	12-Apr	33 Transcription	16, 17
F	14-Apr	34 Ribosome and Translation	16, 17
M	17-Apr	35 Ribosome and Translation	16, 17
W	19-Apr	36 Regulation of Gene Expression in Prokaryotes	18
F	21-Apr	37 Regulation of Gene Expression in Eukaryotes	18

M	24-Apr	EXAM 4: DNA replication – Regulation of Gene expression.	
W	26-Apr	OPEN, REVIEW OR FINISHING UP. LAST CofC CLASS	
T	27-Apr	READING DAY OR STORM MAKE-UP DAY	
F	08-May	8-11 AM CUMULATIVE FINAL EXAM,	

- These four ½ classes will be taught by Dr. Agnes Southgate ([southgate@cofc.edu](mailto:southgate@cofc.edu), Office: HWWE 306, Tel. 843-953-6544 but in this semester, she is teaching (apart these classes) 100% in SSMB.

Also check in the textbook's certain Bio Skills, dependent on the courses progress / topics, (either in class, or OAKS, Top Hat or bulk e-mail.

**IMPORTANT SEMESTER AND EXAM DATES:** <http://registrar.cofc.edu>

Spring 2017 Exam Schedule

Exam Times	Friday April 28	Saturday April 29	Sunday April 30	Monday May 1	Tuesday May 2	Wednesday May 3	Thursday May 4	Friday May 5
8:00am-11:00am	MWF 9:00am 9:30am	TR 8:00am 8:30am	Reading Day 8:00-4:00pm	MWF 10:00am 10:30am	TR 10:50am 11:20am	MWF 7:30am	TR 9:25am 9:55am	MWF 8:00am 8:30am
12:00pm-3:00pm	MWF 11:00am 11:30am	Math all 101,111, 120 Exams		MWF/MW 2:00pm 2:30pm	TR 1:40pm 2:10pm	MWF 12:00pm 12:30pm	TR 12:15pm 12:45pm	MWF 1:00pm 1:30pm
4:00pm-7:00pm	MWF 3:00pm 3:30pm MW 3:25pm	H	Online Final Exams	E	TR 3:05pm 3:35pm 4:00pm	F	TR 7:05am	MWF/MW 4:00pm
7:30pm-10:30pm	D	G		A	B	C	I	J

## COURSE AND COLLEGE POLICIES

### ATTENDANCE POLICY

You are **expected** to be present for every lecture. You will be allowed **three absences for the course (~once per month) without penalty to your attendance grade after add/drop on Wed. Jan. 18 2017**. There will be regular random attendance in the class. For each absence after the three allowed absences without an official excuse and documentation, I will e-mail you for a response. If it occurs again, I will e-mail again but this time asking for a meeting with me. If there is no response or you have a sixth absence without any explanation or documentation, I will label this student with **EXCESSIVE ABSENCES leading to a "WA" GRADE (WITHDRAWN EXCESSIVE ABSENCE) AT MIDTERM AND/OR IN THE FINAL GRADE**. A final "WA" grade is calculated as an "F" in your GPA. This is College policy.

**\*\*\*This does not apply obviously if the absences are due to a SERIOUS medical or personal reasons etc. with documented proof\*\*\* I will also work with you to make up for lost classwork etc. `so please contact me.**

- Missing classes penalizes you more than a drop in the class activity points because you can rarely make up on your own the missed materials and never can make up the skill practice, discussion and shared ideas.
- Students are responsible for all content for any class missed.
- Under extenuating circumstances, I will make one-on-one decision based on individual conditions and again if you have provided documentation.

**I will work individually with student-athletes who will need to be absent for meets/competitions/games.**

**DISABILITY SERVICES (<http://www.disabilityservices.cofc.edu>)**

The College will make reasonable accommodations for persons with documented disabilities. Students should apply at the Center for Disability Services / SNAP, located on the first floor of the Lightsey Center, Suite 104. If there is a student in this class who has a documented disability and has been approved to receive accommodations through SNAP Services, please feel free to come and discuss this with me during my office hours or if necessary by an appointment.

- Any student eligible for and needing academic adjustments or accommodations because of a disability is requested to speak with the professor in a timely manner so that your needs can be addressed i.e. earlier than later.
- The College will make reasonable accommodations for persons with documented disabilities. Students should apply for services at the Center for Disability Services located on the first floor of the Lightsey Center, Suite 104. Students approved for accommodations should notify their professors as quickly as possible.
- This College abides by section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act that stipulates no student shall be denied access to an education “solely by reason of a handicap.” Disabilities covered by law include, but are not limited to, learning disabilities and hearing, sight or mobility impairments. 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, (843) 953-1431 or me so that such accommodation may be arranged.

<http://disabilityservices.cofc.edu/>

**• 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 be 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/>  
<http://studentaffairs.cofc.edu/honor-system/studenthandbook/>  
<http://parkj.people.cofc.edu/HonorCode.pdf>

**CENTER FOR STUDENT LEARNING** see above. call (843)953-5635. <http://csi.cofc.edu/>

### **STUDY SKILLS WORKSHOPS**

Each semester a series of study skills workshops are offered free of charge to all College of Charleston students. The Workshop Series 101 is geared towards the general student population wanting more information on study skills. The Workshop Series 101 occurs three times a week lasting about 50 minutes for each session. Students will receive weekly reminders via email and Facebook for the upcoming session with time and place.

You can also visit <http://csi.cofc.edu/study-skills/workshops/index.php>

If you see mistakes in this syllabus, please let me know.