***Cellular and Developmental Biology (BIOL 205)***

***Fall 2019***

**Dr. Alaina Garland**

MWF 2:30-3:20PM in Coker 201

**Instructor:** **Dr. Alaina Garland**

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**Office hours: *Tuesdays 1:50pm-2:50pm and Fridays 11am-12pm in 135 Wilson Hall. Sign up on the Sign-up tab in Sakai!*** *I am also available by appointment, so please contact me if you cannot meet me during the times here.*

**TAs:**

**Andrew Truong** **atruong@email.unc.edu** **Office Hours: TBD (see Sakai)**

**Sarah Clinkscales** **seclink@email.unc.edu** **Office Hours: TBD (see Sakai)**

**SAKAI SITE**

(You must have an onyen to log on. Go to <https://itsapps.unc.edu/improv/#UserCreateOnyenPlace:createOnyen> if you do not have an onyen.) The Sakai site will have postings from lectures such as outlines, power point slides, and supplemental material we mention in lecture. I will also post announcements regarding student concerns on this site. It is your responsibility to check it regularly.

**REQUIRED TEXT for 1st half of the course:**

Essential Cell Biology. 5th Edition by Alberts, Bray, Hopkin, Johnson, Lewis, Raff, Roberts, Walter

**REQUIRED TEXT for 2nd half of the course:**

Principles of Development. 5th Edition by Lewis Wolpert, Cheryll Tickle, and Alfonso Martinez Arias

**Required reading:** Particular chapters are required (see course outline for “Guided Reading” details) and **you will be expected to have read them before class** so that you will be able to participate fully in the in-class activities. You may be asked to turn guided reading assignments in on occasion and you may even receive points for completing them. You SHOULD always complete guided reading assignments prior to coming to lecture. You simply will not be able to fully engage in the class without a basic understanding of the material that will be covered.

**HOMEWORK QUIZZES ON SAKAI:** Homework will be due the morning before almost every class period at 11:00AM. **It is your responsibility to start it in a timely fashion so that you finish it before the deadline.** Late homework will receive zero credit, even though you can still do them for practice. DO NOT ASK ME TO MAKE AN EXCEPTION TO THIS RULE. It is YOUR responsibility to finish the homework early so that any last minute crises do not prevent your finishing on time. Realize that we are trying to *help* you to succeed by giving you these regular assessments. These assessments will be a part of your participation grade.

**POLL EVERYWHERE:** As an incentive to come to class and be engaged, part of your grade will come from a program called Poll Everywhere that you use through your laptop or mobile phone. Note - missing just a couple of classes can quickly affect your participation grade! **See Sakai for the required registration and troubleshooting and grading policy information.**

**PIAZZA:** There are many of you, and your questions are important to us. However, it is often difficult for a single instructor with so many students to address all of the e-mails that are received throughout the course of the course. Many other students may also have the same question you do! Therefore, in order to address your questions and concerns more efficiently, we will be using an online platform called “Piazza” this course. You may post any questions that you have about the course to this site at any time and they will be answered by either a fellow student, a TA, or your instructor. Your questions may be more general and may relate to the course itself or they may be more specific and instead relate directly to content and/or material from class. P. With the exception of private/personal questions and concerns (which are always welcome in our inboxes) please direct all questions to this discussion board. In any case, Piazza will help you get them answered ASAP. Please register for Piazza via the following link: piazza.com/unc/fall2019/biol205

**DIGITAL ETIQUETTE**

This course will require you to use your laptop and/or cell phone during class time. While I recognize that you are an excellent multi-tasker, research suggests that your peers are not. Please be respectful of your classmates and restrict your use of digital devices to course content. If we see that you or your peers are distracted, we will ask you to put your devices away and you may forfeit your ability to earn participation points that day. There will be times when you have completed your work or answered a poll question, but your peers have not. We ask that you assist your peers when appropriate or use the time to review your notes while you wait. I understand that your devices connect you to your friends and family (a wonderful thing!) but the classroom should be a place apart, however briefly (even if it seems like an eternity to you), from the outside world and distractions. You will learn more if you concentrate on the course while you are here and your classmates will thank you for not impeding their ability to learn.

**WHAT YOU SHOULD BRING TO CLASS EVERY DAY:**

1. Outlines from Sakai (either printed or on laptop).

2. Extra blank paper for drawings, notes, activities etc. (or tablet computer for drawing)

3. Poll Everywhere device: either your cell phone for texting or laptop/ipad/smartphone

**COURSE GOALS:** Many students like to complain that this is a “weed out” course. Of course this is not true, but why does it have this reputation? Fact: the average grade in this class is in the B/C range; C’s are not *bad* - they are *average*. If you are wondering if there is a pre-determined number of students that receive a C, D, or F – the answer is no! In theory, if the whole class performs at an A level, then the whole class is given A’s.

**DIVERSITY STATEMENT:** The Department of Biology values the perspectives of individuals from all backgrounds reflecting the diversity of our students. We broadly define diversity to include race, gender identity, national origin, ethnicity, religion, social class, age, sexual orientation, political background, and physical and learning ability. We strive to make this classroom and this department an inclusive space for all students.

***And, this brings us to the goals of our course…***

**1. To provide you with the core principles of cell and developmental biology.**

The lecture and the book will introduce you to the fields of cell biology and developmental biology. After this class, you will have a basic understanding of cell and developmental biology and will be equipped to build upon this content with upper level courses in biology.

**Amended Bloom’s Taxonomy:** developed as a method of classifying educational goals for student performance evaluation. You should think about this as you study for exams and ask yourself, am I using different kinds of thinking?

**2. To gain higher level thinking skills that are necessary for scientists.**To the right you can see the “Amended Bloom’s Taxonomy” pyramid. It was developed as a method of classifying educational goals for student performance evaluation. You should be well –equipped at remembering facts and content with good study habits. We are looking for you to *apply* and *analyze*. You are UNC students, we KNOW you can memorize! Move beyond this level of thinking. How can we achieve this? We will have in-class questions to practice this immediately and you will have homework problems to practice on your own. We will also explore classic experiments as a way of thinking through the logic of experiments and to see where the foundations of this content come from. While these may be new ways of thinking for you, practice is the most important way to gain these skills. FYI: UNC’s medical school sees this is an excellent pre-req course for medical school because it teaches students to *think.*

**3. This course should excite you about basic science and its applications!**

**TESTS**: There will be three tests and a final exam given during the session.

The format will be multiple choice and open ended. These exams will cover the material specified on the course schedule, and though they are not entirely cumulative, each unit builds on material from the previous unit. So, concepts and experimental design learned earlier in the class will be used throughout the semester, both during class and on exams. Test material to study: guided readings, outlines, homework, lecture activities, recitation assignments, and power point slides. Therefore, to succeed in this class, it behooves you to take each reading/homework seriously and actively engage in all class discussions. There is no option to drop a test grade and there are no extra credit options. Exams must be taken on the dates indicated during the regular class period; **no makeup exams** except in special circumstances, i.e., medical or family emergency documented in writing prior to missing the exam. The instructors reserve the right to give oral make-up exams. If you still do not understand content after your exam has been graded and would like to discuss concepts, we encourage you to meet with your TA or instructor. **If you have a question related to points deserved, you must put it in writing no more than 5 days after an exam has been returned to you and turn it in to your instructor. Please note that your ENTIRE exam will be regraded if you submit a regrade, which may result in loss of points on other questions if they were also misgraded.**

**HOW IS YOUR GRADE DETERMINED?** (*Note: there will be no changes to HOW your final average is calculated at the end of the semester and* ***THERE IS NO EXTRA CREDIT****…so please don’t ask! You will get the grade you EARN!)*

***Your final average is calculated:***

Total for the semester =

(0.21 x test) + (0.21 x test) + (0.21 x test) + (0.21 x final exam) + (0.04 x Participation) + (.07 x recitation) + (.05 x homework score)

Participation scores include PollEverywhere and may also include collection of completed GRQs.

***Converting your final average to a letter grade:***
A = or greater than: 93 C+ = or greater than: 77
A- = or greater than: 90 C = or greater than: 73
B+ = or greater than: 87 C- = or greater than: 70
B = or greater than: 83 D = or greater than: 60

B- = or greater than: 80 F is less than: 60 (or a score of 45% or less on the final exam)

**COPYRIGHT POLICY**

All course materials including your class notes and in-class assignments are covered by University Copyright Policy, @<http://www.unc.edu/campus/policies/copyright%20policy%2000008319.pdf>. This means it is illegal and an honor code offense to share your notes or any other course materials items with anyone not directly affiliated with this particular class. No uploading to non-class sharing sites.

**HONOR CODE: All work done in this class must be carried out within the letter and spirit of the UNC Honor Code. You must sign a pledge on all graded work certifying that no unauthorized assistance has been given or received. You are expected to maintain the confidentiality of examinations by divulging no information about any examination to a student who has not yet taken that exam. You are also responsible for consulting with your professors if you are unclear about the meaning of plagiarism or about whether any particular act on your part constitutes plagiarism. Please talk with the professor if you have any questions about how the Honor Code pertains to this course.**

**Class Schedule:**

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| --- | --- | --- | --- |
| **Date**  | **Lecture #** | **Assignments to be completed BEFORE this class** | **Topics covered** |
| Wed8/21 | 1 | No assignment due | Introduction to Cell Biology |
| Fri8/23 | 2 | Read Chapter 1 in Essential Cell Biology (book used in the Cell portion of the class where we’ll be starting)**Sakai quiz due at 11AM: Introduction to the cell** | Introduction to Cell Biology/Protein Structure and Function |
| Mon8/26 | 3 | Read pages 121-155 in Chapter 4 and complete the guided reading assignment. **Sakai quiz due at 11AM: Protein structure and function** | Protein structure and function |
| Wed8/28 | 4 | Read pages 164-167 in Chapter 4 and complete the guided reading assignment on western blotting.**Sakai quiz due at 11AM: How we study proteins** | How we study proteins – Methods and Tools |
| Fri 8/30 | 5 | Read pages 359-374 in Chapter 11 and complete the guided reading assignment.Read pages 383-398 in Chapter 12 and complete guided reading assignment.**Sakai quiz due at 11AM: Membranes and Membrane transport** | How we study proteins/Membrane Structure and Function |
| Mon9/2 |  | No class – Labor Day | No class – Labor day |
| Wed9/4 | 6 | No assignment due | Membrane Structure and functionMembrane transport |
| Fri9/6 | 7 | Read pages 487-518 in Chapter 15 and complete guided reading assignment**Sakai quiz due at 11AM: Targeting and Trafficking** | Targeting and trafficking |
| Mon9/9 | 8 | No assignment due. Catch up/review | Targeting and trafficking, cont. |
| Wed9/11 | **Exam 1** |
| Fri9/13 | 9 | Read pages 83-93 and other pages noted in GRQs and complete guided reading assignment. **Sakai quiz due at 11AM: How cells obtain energy** | How cells obtain energy |
| Mon9/16 | 10 | Read and complete guided reading assignment on Chapter 17**Sakai quiz due at 11AM: Cytoskeleton** | How cells obtain energy/Cytoskeleton |
| Wed9/18 | 11 | **No assignment due** | Cytoskeleton cont |
| Fri9/20 | 12 | Read and complete guided reading assignment on Chapter 16**Sakai quiz due at 11AM: Cell communication** | Cell communication |
| Mon9/23 | 13 | No assignment due | Cell communication continued. |
| Wed9/25 | 14 | Read and complete guided reading assignment On Cell cycle**Sakai quiz due at 11AM: Cell cycle** | Cell Cycle |
| Fri9/27 | 15 | No assignment due | Cell Cycle, cont |
| Mon9/30 | 16 | Read and complete guided reading assignment on cell junctions**Sakai quiz due at 11AM: Cell Junctions** | Cell Junctions |
| Wed10/2 | 17 | Catch-up/Review |  |
| Fri10/4 | **EXAM 2** |
| Mon10/7 | **18** | Specifics for the Developmental Portion of reading assignments and homeworks will be posted when we get closer to this section | **Intro to Development** |
| Wed10/9 | **19** |  | **Differential Gene Expression** |
| Fri10/11 | **20** |  | **Differential Gene Expression and Cell Fate** |
| Mon10/14 | **21** |  | **Oogenesis** |
| Wed10/16 | **22** |  | **Oogenesis and Fertilization** |
| Fri10/18 |  | Fall Break – No Class | **No Class** |
| Mon 10/21 | **23** |  | **Fertilization**  |
| Wed10/23 | **24** |  | **Cleavage**  |
| Fri 10/25 | **25** |  | **Gastrulation** |
| Mon10/28 | **26** |  | **Gastrulation** |
| Wed10/30 | **27** |  | **Gastrulation** |
| Friday11/1 | **28** |  | **Gastrulation** |
| Mon11/4 | **EXAM 3** |
| Wed11/6 | **29** |  | **Gastrulation** |
| Fri11/8 | **30** |  | **Gastrulation** |
| Mon11/11 | **31** |  | **Neurulation** |
| Wed11/13 | **32** |  | **Induction** |
| Fri11/15 | **33** |  | **Induction** |
| Mon11/18 | **34** |  | **Determination** |
| Wed11/20 | **35** |  | **Tetrapod Limb Formation** |
| Fri11/22 | **36** |  | **Tetrapod Limb Formation** |
| Mon11/25 | **37** |  | **Making a Mammal: Mouse** |
| Wed11/27 |  | **No class – Thanksgiving Break** | **No class – Thanksgiving Break** |
| Fri11/29 |  | **No class – Thanksgiving Break** | **No class – Thanksgiving Break** |
| Mon12/2 | **38** |  | **Cancer** |
| Wed12/4 | **39** | **Catch-up/review** |  |
| Fri12/6 | **FINAL EXAM (EXAM 4) 4PM-7PM** |