Preliminary Syllabus Biology 205 Fall 2020

Cell and Developmental Biology (BIOL 205)

Dr. Michael Werner and Dr. Mark Peifer

**When:**

Lecture remotely via ZOOM: Tuesday and Thursday 9:30-10:45 am

Recitation remotely via ZOOM: TBD

**Where:**

Class: Via zoom (INSERT ZOOM LINK HERE)

Recitation: TBD

**Instructors:**

Dr. Michael Werner (Cell Biology, first half of semester)

wernerm@email.unc.edu

Office location: ZOOM LINK TO OFFICE HOURS

Office hours: TBD

Dr. Mark Peifer (Developmental Biology, second half of semester)

peifer@unc.edu

Office location: ZOOM LINK TO OFFICE HOURS

Office hours: TBD

Teaching assistants: Angana Mukherjee

[amukherjee@med.unc.edu](mailto:amukherjee@med.unc.edu)

Office hours:

ZOOM LINK TO OFFICE HOURS

Allison Skinkle

[askinkle@live.unc.edu](mailto:askinkle@live.unc.edu)

Office hours:

ZOOM LINK TO OFFICE HOURS

Yuan Gao

[yuan.gao@unc.edu](mailto:yuan.gao@unc.edu)

Office hours:

ZOOM LINK TO OFFICE HOURS

Student Instructors / Peer mentors:

Ryan Dickerson

[ryan.dickerson@unc.edu](mailto:ryan.dickerson@unc.edu)

Jessica Harvey

[jessica2@live.unc.edu](mailto:jessica2@live.unc.edu)

Andy Liu

[andylucy@live.unc.edu](mailto:andylucy@live.unc.edu)

Urvi Patel

[urvi@live.unc.edu](mailto:urvi@live.unc.edu)

**Required textbooks:**

Essential Cell Biology 5h Edition (Digital delivery recommended) including Smartworks5

by Alberts, Bray, Hopkin, Johnson, Lewis, Raff, Roberts, Walter

Principles of Development 5th Edition

by Wolpert, Tickle and Martinez Arias

**Broad Learning Objectives:**

By completing this class you will have:

Acquired a basic understanding of the fundamental principles and mechanisms of cell and developmental biology.

Developed a general understanding of the experimental approaches and various model systems used to study cell and developmental biology.

Developed higher level thinking skills by learning how to apply these basic principles to design and interpret experiments in order to answer specific cell and developmental biological questions.

Gained an appreciation of the importance of studying cell and developmental biological question to promote a better understanding of human diseases.

**Class Structure**

**Synchronous zoom lecture** with polls and breakout room activities at designated class time

Lectures will be recorded and recordings posted on sakai

Separate **recitation via zoom**

**Homework** using Smartworks or Gradescope

**Guided readings** to prepare and submit before each class

**General Course Policies:**

GENERAL GUIDELINES: These are extraordinary times and we understand that this is not how any of you expected your experience at UNC to be. We are committed to support you to the best of our ability to be successful in this class despite the unfortunate circumstances. It is also the first time for us teaching this class in this format and we ask for your patience as we are learning how to best adapt. We know one reason many of you chose to attend UNC is for the community and connections you are hoping to make while you are here. Remember physical distancing does not have to mean social isolation. Perhaps even more so now, it is essential to rely on you peers for help and support to enhance your learning experience. We are in this together and we want you all to do well, but to have this happen you need to do your part. Please take advantage of ALL of the opportunities to learn and review the material and engage in the in-class activities, group homework assignments and community forums.

HONOR CODE STATEMENT: “All work done in this class must be carried out within the letter and spirit of the UNC Honor Code.”

DIVERSITY STATEMENT: We and the Department of Biology value the perspectives of individuals from all backgrounds reflecting the diversity of our students and our nation. 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. The events of this past summer have reminded us that our nation and our University are shaped by a history of systemic racism. Conversations with our students have revealed that racist actions do happen in classrooms and labs at UNC, and these and micro-aggressions can make our campus less welcoming for Black, Indigenous, and People of Color, as well as women, international students and those from invisible minority groups. We strive to make this classroom and this Department an inclusive space for ALL students. We the Instructors are committed to promoting an inclusive learning environment and welcome all suggestions that help us honor this commitment. We are still in the process of learning about diverse perspectives and identities. If something was said in class (by us as instructors or anyone) that made you feel uncomfortable, please talk to us about it (anonymous feedback is always an option).

GUIDELINES FOR INCLUSIVE PARTICIPATION IN CLASS

Be aware of how much you are contributing to in-class discussions**.** Try not to silence yourself out of concern for what others will think about what you say. If you have an idea, don’t wait for someone else to say it; say it yourself.  On the other hand, if you have a tendency to contribute often, give others the opportunity to speak.

Listen respectfully. Don’t interrupt, engage in private conversations, or turn to technology while others are speaking. Use attentive, courteous body language.

Understand that there are different approaches to solving problems**.**  If you are uncertain about someone else’s approach, ask a question to explore areas of uncertainty. Listen respectfully to how and why the approach could work.

Take group work seriously. Remember that your peers’ learning partly depends upon your engagement.

Be careful about how you use humor or irony in class**.** Keep in mind that we don’t all find the same things funny.

Make an effort to get to know other students.  Introduce yourself to students sitting near you. Refer to classmates by name and make eye contact with other students.

FEEDBACK: We value and encourage feedback to improve our teaching and your learning experience. We offer multiple ways to leave feedback

In person during office hour or via Email

Dedicated thread on PIAZZA

Regular surveys during the semester (anonymous)

LECTURES: Attendance at ALL classes via ZOOM is highly encouraged. This will make your life easier--the simplest way to learn the material is to have it presented to you in class! Individual lectures and recitations will build on each other. If you miss multiple classes it will be difficult to catch up. Part of your participation grade is directly dependent on regularly attending class and recitation. We understand that these are unusual and challenging times and it may not be possible for all of you to attend class all the time. All classes will be recorded and the recordings will be posted on SAKAI together with automatically generated transcripts. If you are forced to miss a class, watch the recordings as if you attended the class in real time, try to find the answers to the poll everywhere questions and work through the problems assigned to break out groups on your own.

QUESTIONS:

In class: If you have questions about the material, please feel free to ask questions IN CLASS by posting to the chat on Zoom. TA’s, SI’s and PM’s will monitor the chat and we will have dedicated class time during the lecture to answer a curated list of your questions. If our schedule permits, we will also remain on Zoom after the end of class for some time to answer some questions that we did not have time to address during the lecture. If your questions have not been answered in class please use the PIAZZA forum or bring them to us at our office hours or to your TA, SI’s and PM’s.

Since our time is limited outside of the classroom please respect the following guidelines when having questions concerning the lecture:

PIAZZA: We use PIAZZA as a student forum. This will be your primary place to have course related questions answered by fellow students, TAs or instructors. We encourage you to visit frequently to ask and answer course related questions. Participation in this forum, answering questions from fellow students, will count as part of your participation. TA’s and Instructors will also periodically monitor the forum. Please check and post on this forum first if you have any questions it both saves you the hassle of waiting for your turn at office hours and avoids instructors and TAs answering the same question multiple times.

Office hours: We know not all the concepts we presented in class will be clear to all (and some may not be clear to any :)). We welcome all students at office hours--our personal experience and scientific research both show that use of office hours is one of the best routes to excelling in the course. If you feel that you have difficulty keeping up with the pace of the class or do poorly on the assignments or exams please talk to the instructors **as early as possible** to discuss how we can help you improve your performance in the class. We can help **all of you** master the material but you need to take the first step. If you absolutely cannot attend office hours let us know and we will try to find a different time to talk.

Email: As a general rule, we do not answer questions regarding course content via email. It is the least efficient way of communication for this purpose. Please use the forum, office hours or come to us after the class to ask your course related question. Private and personal questions/concerns are always welcome in our inbox.

RECITATION: Attendance of one of the recitation sections is required. Except when specified, recitations are not review sessions and are designed to deepen your understanding of concepts discussed in class. You may be given pre-class or in-class assignments which together with your participation in in-class activities during recitation will determine your recitation grade. There will be no make-up exams for in-class assignments missed because you did not attend recitation. You will be permitted to miss one in-class assignment during recitation during the entire semester without it affecting your recitation grade provided you submit written explanation of circumstances beyond your control that forced you to miss the recitation session. If you are unable to attend the recitation session you are registered for one week you may be able to attend the other sessions with consent of your TA. Since space is limited **do not assume you will automatically be able to attend another session if you miss recitation**.

**What to do before the start of the first class**

Watch “Getting ready for BIOL 205” posted on Sakai

Follow the registration guidelines to make sure you have an account and are enrolled for BIOL 205 on the platforms mentioned in the video

Complete pre-class survey (encouraged but not mandatory)

**What to have ready each for class:**

Have completed online Quiz if relevant

Course outlines and slides from Sakai when available

Completed and submitted Guided reading assignments

Blank sheets of paper and pen for notes and activities

Poll Everywhere device

**Break-out groups:**

At the beginning of the semester you will be assigned to a break-out group. During group activities in Zoom you will automatically be directed to separate break-out Zoom rooms containing only the members from your breakout group to work through the activities together and to foster learning and community building. TA’s, SI’s and PM’s may randomly pop into these breakout rooms to facilitate discussion. Break-out room participant will have assigned roles that change from assignment to assignment to facilitate discussion during the group work and reporting back the findings.

**Sakai:**

You must have an onyen to log on

(go to https://itsapps.unc.edu/improv/#UserCreateOnyenPlace:createOnyen

if you do not have an onyen.)

All PowerPoint slides for the Cell Biology half will be posted on Sakai before the lecture.

**For the Development half of the class many Course materials can be found at:**

<http://courses.bio.unc.edu/2020Fall/Biol205section7>

Sakai will also contain the most recent syllabus, guided reading assignments, online quizzes for the Development half of the course, supplemental material we mention during class such as poll everywhere questions with correct answers.

We will also post homework assignments and surveys on Sakai that will have to be completed online through Sakai.

We will continuously update course related material to Sakai as the class progresses

**It is your responsibility to check the site regularly.**

**Guided readings**

**Selected parts of individual chapters** will be required reading assignments. You are expected to read the assigned part before each class. Guided reading assignments will be posted on Sakai or Dr. Peifer’s Course website for each session. These guided reading assignments are designed to help you identify what to take away from those readings. Guided readings will have to be uploaded to Gradescope prior to the beginning of class and will be part of your homework grade. Content covered by those assignments can be essential for understanding the topics covered in class and will be included in your exams.

**Homework:**

Practice questions to review what you learned in the previous class or to prepare you for the upcoming class will have to be completed using Smartworks 5 and are at the end of each week (Sunday 11:59pm EST).

**Poll Everywhere:**

As an incentive for you to come to class and to facilitate your engagement during class a percentage of your grade will come from a program called Poll Everywhere that you use through your laptop or mobile phone. Poll Everywhere will also be used to assess how well you understand specific concepts and if you have completed your reading assignments.

Watch the video Getting ready for BIOL205 posted on Sakai for the required registration information

**Peerwise:**

Peerwise is another online learning tool that we will use to better prepare you for the exams. By participating in peerwise you will help generate a bank of practice exam questions that all of you can use to study for the exam. It will also allow you to earn participation points. In order to do so you are expected to post at least one potential exam question for every exam and provide an answer to at least one of your peers questions for every exam week.

**Grading:**

Grades will not be assigned for individual exams, only points; you will be able to see how you did from a posted distribution of scores after each test. This will allow us to adjust the grade curve should one exam turn out to have been to difficult. In thinking about your performance, play close attention to your grade versus both the median and mean grades as this will give you a better picture of where you stand relative to your peers.

For the **cell biology half** of the class your point total will be a weighted average of 2 in class exams 80% and associated exam corrections (5%), recitation (7%), homework and guided readings (5%) as well as participation (3%). The exam grade is also determined as a weighted average whereby the exam with the higher score will count for 50% and the one with the lower score for 30%).

For the **developmental biology half**, your final your point total will be determined mainly by your performance on two exams, each given equal weight (100 points = 42.5% each). 7% of your final grade will depend on satisfactory completion of online quizzes, and 5% on work before and during recitation, and 3% for guided reading questions and in-class activities.

Your participation grade will be a combination of participation in in-class activities, responses to poll everywhere questions in class, answering peer-questions on PIAZZA and posting and answering questions on Peerwise.

Individual exams are not cumulative and will only cover in detail the course content specified. Course material to study for the exam will include material covered in class, recitation, homework and guided readings. However, we will continue to build on what you learned so don’t “erase” the knowledge you gain in earlier parts of the class.

Attendance at all exam times is mandatory. Make-up exams may only be granted in exceptional circumstances such as family or medical emergencies. Instructors must be notified by the time of the exam of such emergencies. These absences beyond your control must additionally be documented in writing for a make-up exam to be granted. The make-up exam will not be the same as the in-class exam, may be an oral exam and may be more difficult than the in-class exam.

If the points on your exam were added incorrectly please see a TA or instructor and he/she will promptly make the necessary corrections. Any other requests for exam re-grading must be in the form of a written appeal turned in to your TA or instructor. Include your exam and a written justification for why your answer was incorrectly rejected. Any appeal must be made within 5 calendar days after the graded exams are made available to you.

**Copyright policy:**

All course materials including your class notes and in class presentations 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 material items with anyone not directly affiliated with this particular class**. No uploading to non-class sharing sites. You are however encouraged to download a private copy to you own device for the unlikely event of a server outage limiting your access to course material on Sakai

**Class schedule:**

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| --- | --- | --- |
| **DAY** | **Topic covered in class or recitation** | **Pre- class assignments** |
| Tuesday  8/11 | Introduction to cell biology | Complete online survey  Watch Getting ready for BIOL205 and follow instructions |
| Recitation 1  8/12 | Discover model organisms: research | None |
| Thursday  8/13 | Cellular building blocks  Protein structure | guided readings Chapter 1 & 2 |
|  |  |  |
| Tuesday  8/18 | Protein structure (cont.)  Protein function | guided readings Chapter 4 |
| Recitation 2  8/19 | Discover model organisms small group presentations and peer feed back | Prepare presentations about assigned model organism |
| Thursday  8/20 | Microscopy and how we study cells  Membrane structure | guided readings Chapter 10&11 |
|  |  |  |
| Tuesday  8/25 | Transport across membranes  Mitochondria: cellular power plants | guided readings Chapter 12&14 |
| Recitation 3  8/26 | Selected technologies to study proteins and cells | Prepare assigned readings |
| Thursday  8/27 | Intracellular transport | guided readings Chapter 15 |
|  |  |  |
| Tuesday  9/01 | Intracellular transport (cont)  Cell-cell- communication Part 1 | guided readings Chapter 16 |
| Recitation 4  9/02 | Exam review | Answer practice questions |
| Thursday  9/03 | Exam 1  covering the first 3 weeks of class | study |
|  |  |  |
| Tuesday  9/08 | Cell-cell- communication Part 2 | guided readings Chapter 16 |
| Recitation 5  9/09 | Interpretation of cell biological data in the context of a research article | Read assigned research paper and complete homework questions |
| Thursday  9/10 | The cytoskeleton 1: microtubules and actin | guided readings Chapter 17 |
|  |  |  |
| Tuesday  9/15 | The cytoskeleton 2: motor proteins and intermediate filaments | guided readings Chapter 17 |
| Recitation 6  9/16 | Cell Biology in real life situations | Read assigned research paper and complete homework questions |
| Thursday  9/17 | The cell cycle and mitosis and cell proliferation | guided readings Chapter 18 |
|  |  |  |
| Tuesday  9/22 | Cell death, Cell-cell contact, cell migration | guided readings Chapter 18 |
| Recitation 7  9/23 | Exam Review | Answer assigned practice questions |
| Thursday  9/24 | The cell biology of cancer | TBD |
|  |  |  |
| Tuesday  9/29 | Exam 2  covering week 4-7 of class | study |
|  | END OF CELL BIOLOGY HALF OF CLASS |  |
| Recitation 8  9/30 | No recitation |  |
| Thursday  10/01 | Cell-cell and cell-matrix junctions in development and disease |  |
|  |  |  |
| Tuesday  10/06 | Development rocks--from the start! +  Oogenesis and Fertilization |  |
| Recitation 9  10/07 | Junctions and Disease |  |
| Thursday  10/08 | Cleavage & Gastrulation |  |
|  |  |  |
| Tuesday  10/13 | Gastrulation & Neurulation |  |
| Recitation 10  10/14 | Neural Tube Defects |  |
| Thursday  10/15 | Gastrulation & Neurulation II |  |
|  |  |  |
| Tuesday  10/20 | Induction and long range signaling |  |
| Recitation 11  10/21 | Exam Review |  |
| Thursday  10/22 | Determination & differentiation |  |
|  |  |  |
| Tuesday  10/27 | Exam 3—Material through Tuesday 10/20 |  |
| Recitation 12  10/28 | No recitation |  |
| Thursday  10/29 | Patterning the body plan: Drosophila |  |
|  |  |  |
| Tuesday  11/03 | A model for organogenesis: C. elegans |  |
| Recitation 13  11/04 | Fly genes, machines and cancer |  |
| Thursday  11/05 | Making a mammal: Mouse development |  |
|  |  |  |
| Tuesday  11/10 | Mouse development continued |  |
| Recitation 14  11/11 | ES and IPS cells |  |
| Thursday  11/12 | Returning to Cancer-an aberration of development |  |
|  |  |  |
| Tuesday  11/17 | Cancer-an aberration of development (continued) |  |
| 11/17 | LAST DAY OF CLASSES |  |
| 11/20 4 PM | Final Exam |  |

This schedule is preliminary and may change during the semester