# Bio141 – Cellular Biology (Block 5)

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***Textbook:*** *OpenStax Biology 2e; see moodle site for on-line access.  
Other reading materials will be assigned as needed and posted on moodle.*

## Course Overview and Objectives

This course is intended as an introduction to some of the basic cellular biology concepts within an applied setting. Because I am interested in soil biology, we will be exploring the biology of soil using some relatively common lab techniques, while at the same time giving you to opportunity to learn many of the fundamental concepts needed to understand the biology of cells.

What does soil have to do with cells? It turns out that soils hold the greatest level of biological diversity on earth. Unfortunately that biodiversity is microscopic, so in order to study soil biology, we really need to study cellular biology using methods from chemistry, biochemistry, and molecular genetics.

Here are the major goals you should strive to accomplish in this course.

Describe the molecular basis for cellular processes encountered in soil ecosystems.

Develop and apply tools of scientific inquiry through experimentation and literature research.

With respect to the first goal, most of you are used to thinking in very general terms when explaining biological processes. For example, if asked what a nutrient is, I bet 95% of you would tell me that it is something you eat to get energy. While this is true, this perspective is overly simplistic. If you want to get ahead in this world, you need to be more sophisticated in understanding the types of molecules nutrients might include, and how they provide the physical elements, like nitrogen, to build and rebuild proteins, membranes, and DNA. There is also the idea that energy is released when these molecules undergo structural changes, transferring energy to other molecules like ATP. That is the level of thinking that you need to develop as a scientist.

The second objective is about scientific behavior. While we aren’t grooming you to win the Nobel Prize, we are expecting you to develop skills necessary for approaching the world in a scientific manner. While this obviously includes measuring things, it also includes learning how to interpret what you measure (what it means) and then explaining it to other people. In other words, I don’t just want you to know some scientific facts when you graduate, I want to you know how scientists are supposed to behave when they are exploring the world. This is essentially what the College has decided in setting its Educational Priorities and Outcomes, and this course specifically addresses those dealing with knowledge, inquiry, reasoning, and communication.

## Course Assignments and Grading Policies

Exams – There are 3 exams each worth 100 pts. Exams days are listed on the schedule.

Attendance –is not optional. More than one (1) unexcused absence will drop you a letter grade.

Lab – 100 pts total and based on lab notebook and the final presentation of your lab project. Details will be given in a separate handout.

Writing assignments – You will have 2 short writing assignments about the labs we do in the first two weeks of class. These will be 30 pts each for a total of 60 pts.

Reading assignments – You will have 2 simple reading assignments designed to illustrate how science papers are constructed. These are 20 pts each for 40 pts total.

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| Point distribution for assignments | |  | Grade scale (minimum) | | | |
| 3 Exams (3 x 100 pts) | 300 |  | A | 94-100% | C+ | 77-80% |
| Lab work | 100 |  | A- | 90-94% | C | 73-77% |
| Writing assignments | 60 |  | B+ | 87-90% | C- | 70-73% |
| Reading assignments | 40 |  | B | 83-87% | D+ | 65-70% |
| total | 500 |  | B- | 80-83% | D | 60-65% |

## Academic Dishonesty

In its most general definition, academic dishonesty involves passing the ideas or information of others as your own original work. Obvious examples of dishonesty include actions such as plagiarism (copying, paraphrasing, or stitching) or cheating on exams; however, there are other examples of academic dishonesty (and how to avoid them) that are outlined in your student handbook, The Compass. You are expected to know and adhere to the school policies. Students misrepresenting their work in this course (i.e. plagiarizing or cheating) will automatically fail the assignment and depending on the circumstances may receive a failing grade for the course. Violations of the College’s policies on academic dishonesty are also referred to the Registrar and the Dean of the College and will be dealt with as described in the student handbook.

A word about plagiarism… Collaboration is a great way to learn, and I strongly encourage you to work with others to help you understand the concepts and practices we undertake in class. Unfortunately it is difficult to identify those thoughts and statements that are specifically yours when working collaboratively. Nevertheless, I will expect you explain what you know in your own words. Copying verbatim, paraphrasing, or simply creating a cooperatively written document simply shows that you don’t take much pride in your work and makes it hard to convince others you are a valuable colleague to work with.

## Other Course Policies

Meeting Times Count on class sessions every day from 9-11 am and 12:30–3:00 pm, that way you’ll be happy when I end class early for the day so you can work on outside assignments. You are expected to attend all classes.

Office Hours I have an open door policy and am happy to stop what I am doing to answer your questions (unless I am helping another student). I am generally either in my office (RSC307) or wandering around the building. You may also contact me to schedule a more specific time.

Due Dates Due to the short time frame of our block semesters, **we do not accept late assignments**. You may, however, arrange alternative deadlines for situations in which you have a college-sanctioned event (athletics, choir, band, etc.) that conflicts with the deadline or if you are facing some extenuating health circumstance. **Any alternative deadline must be arranged prior to the original deadline**, preferably at the time the assignment is given.

Exams There are 3 short answer/multiple choice exams. Exams will be available only on the day scheduled and **there will be no make-up exam if you miss one without prior approval.**

Attendance **You are required to attend both lecture and lab**. Although it is possible to never miss a class, there are times when outside circumstances arise (i.e. illness or family emergencies). If you find yourself in this situation, it is your responsibility to notify me before the actual class meeting time that you will not be attending. Failure to notify me beforehand is considered an unexcused absence. **More than one and I’ll drop you a letter grade.**

In the event that you need a late withdrawal on the 15th day, your attendance record is one of the things that I consider in deciding if you have made a “determined effort” to participate in the class. In the interest of defining “determined effort” with respect to attendance, I find it unlikely that you would face extenuating circumstances more than twice during the block.

Withdrawals College policy allows you to drop this class within the first three days of the block. It also permits withdrawing from any course on the 15th day of the block **But only if** you have met the course attendance policy, **and** you have completed all assignments, labs, and exams due on or before the 15th day, **and** you have, “*in the instructor’s opinion,* *made a determined effort to learn the material, complete the work, and participate in class*”.

Special Needs If you require academic adjustments because of a documented learning disability or health-related concern, **it is your responsibility to document your needs with the Registrar/Learning Specialist, and work with me to make arrangements for you accommodations before you need them**. If you suspect you might have a learning disability but have not been diagnosed, you should consult with the Registrar/Learning Specialist.

## Good ideas

You have probably noticed that there are not “participation” points figured into your final grade, and my basic reasoning for this is that learning stuff is your full-time job right now. You future employer isn’t going to give you a raise based on effort. They want whatever product they are paying you for, and if you don’t live up to their expectations, they will simply fire you and find someone else to do it.

Here are some tips for you to figure out how to learn.

* Create a study journal where you reorganize and rewrite notes in a way that connects things you read with things we do in class (both lecture and lab).
* Read daily and actively take notes using a pen a paper. Do not simply highlight things in the text; that is about as passive as you can get and I’d put money on the fact you would never look at the highlighted bits ever again. Now, if you highlighted things and then coded them and made specific connections between them, created questions about them, or linked them to other ideas you recognize from class, then you’d be actively engaged in learning. That is a good thing.
* Work with another person and compare notes, discuss ideas that each of you thought were important from a reading or lecture.
* Ask questions. Find a tutor. Ask me. Oh, there is also this thing called Google you could use if you weren’t sure about something—I find students tend to forget about it.
* Decide that the things we are studying are interesting. Remember, you are in control of what you choose to learn, and the things you find interesting are the things you learn best. Even 18 days is a long time when you have made the choice to be bored.