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Pre-test

Here is the link to the **pre-course survey**. Please take it before class on Wednesday the 21st.

Classes

Lectures are held in Room 202 (Mellon Lecture Hall), Collier Hall of Science Mondays, Wednesdays, and Fridays, 11:45 am to 12:35 pm

Lab

Lab for this course meet in Room 301, Collier Hall of Science Tuesday afternoons, 12:45 to 3:45 Wednesday afternoons, 1:15 to 4:15

Text

The text required for this course is the 2nd edition of What Is Life? A Guide to Biology, by Jay Phelan (W.H. Freeman, 2013).

Companion Website for the text

Blackboard

Dr. Buchkovich will also have a **course site on Blackboard for BIOL100 Lecture** for posting announcements, course materials, and grades.

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Course Objectives

Our primary goal for BIOL100 is to give you an appreciation for, and understanding of, Science. Yes, that's "Science" with a capital "S" because everything we will be discussing is (to some extent) true of all branches of science. And for most of you, this is the last formal exposure to scientific subjects that you'll ever have, so it is (as we hope you'll see over the course of the semester) very important to us that you finish this course equipped to cope with all the "scientific" puffery that you'll come up against for the rest of your lives.

Of course, the fact that we're studying biology specifically is great, because biology is the bestest, most interesting of the sciences. And you can believe that, because we're Scientists, and therefore completely objective and rational, all of the time.

Pffffft. Right.

Okay, more seriously, here is a more detailed list of what we want you to learn in this course:

- why a basic understanding of science is important for every educated person today: science is one of the pillars of a liberal arts education
- the strengths (and weaknesses) of the scientific method
- the meaning of terms such as "hypothesis" and "theory" in a scientific context
- an appreciation of how science changes, and will continue to change in the years ahead
- the ability to approach a problem scientifically
- to design and carry out a good experiment to test your hypotheses
- to be able to judge the validity of scientific claims made by others

In short, by the end of this semester we hope that you will feel (and be!) fairly self-sufficient in navigating the ins and outs of basic science. More importantly, you'll feel confident in being able to learn what you need on your own — no one course, or even four years of them, can prepare you with everything you're going to need to know. And you'll need it — people are going to try and snow you with "evidence" and "proof" for the rest of your lives, and you need to be able to distinguish the good from the bad.

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Course Components

Here are the basic (by which we mean "important" (by which we mean "they affect your grade" (of course))) components of this course — in alphabetical order.

- Exams
- Lab Notes
- Lab Reports
- Assignments
- Participation

Exams

There will be four exams, not including the final. Each will focus primarily on the material covered since the previous exam, but anything covered during the semester up to that point is fair game. The final will be semi-cumulative: about half of the exam will focus on material since the previous hour exam, but the other half will range over material from the entire semester. Barring extenuating circumstances (and it is entirely up to Prof. Buchkovich to decide what is an acceptable circumstance), no make-up exams will be given. Typically a student will have 0-1 acceptable circumstances per semester. The student is encouraged to contact Dr. Buchkovich as far in advance of their absence as possible. In the case of an emergency, contact Dr. Buchkovich as soon as possible once the immediate emergency is resolved. (Email or voice is preferred.)

Lab Notes

Keeping an accurate, legible, and complete laboratory notebook is an **absolute requirement** of this course. Your notebook may be maintained electronically (although using a laptop in lab is not without risks) or on paper. If you want to recopy your notes, that's fine, but I am only concerned with your "official," writtenin-lab notes.

Prof. Jones will examine your notes weekly and give you feedback on them; your lab notes will be factored into many of your lab report grades. He will also collect your notebooks at the end of the semester; they will be available to you for a portion of the final exam, so do a good job with them!

Lab Reports

Prof. Jones will be asking for lab reports for almost every lab we do. Usually these will be in a straightforward short-answer format, but he will let you know what he

expects for each lab as they arise. Each report will be worth 100 points.

For group reports, they must be group efforts. Every group member's name should of course appear on it, and every member must initial the front/top somewhere, indicating that he or she has read the final report and accepts responsibility for its contents.

Only your top 10 lab reports will count toward your final grade. This means that you only need to turn in 10 lab reports over the course of the semester (but may of course turn in more).

Assignments

Dr. Buchkovich will give occasional miscellaneous assignments over the course of the semester. These will be worth whatever points she announces at the time. She anticipates that there will be a total of 100 to 200 points in this category by the end of the semester.

Your first assignment will be to take the pre-course test before Wednesday. You will take a post-course test at the end of the semester for the purpose of comparing your knowledge. You will receive a total of 50 points for taking the pre- and post-tests. Your scores will not impact your grade, but will enable us to evaluate the course and your progress.

Participation

Class participation will necessarily be somewhat subjective, but will encompass just that: participating in class. Asking questions, answering questions, being prepared to discuss whatever topics arise, doing your share of the work in lab — you're not children, you know what is meant by the term "participation." we assume a certain amount of participation on everyone's part; we will award up to 50 points for participation "above and beyond" at the end of the semester toward your final grade.

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Grading

First, a note on grading. We do not grade on a curve, so we hope that each of you will do your best to help your fellow students: if they benefit, it does you no harm. In fact, one of the best ways to learn something is to explain it to someone else, so talk to your classmates (see **Studying Biology** in the "Policies" section).

We're going to be using the point system for this course, so you don't have to worry about calculating percentages for individual components. We'll try to keep an up-to-date total here on the website, so you can always determine your grade so far by comparing what you've earned with the max possible. (And don't you just hate Max, that little weenie?) Given the **grading scale**, you can therefore calculate your own grade in the course at any time.

We've laid out the **course components** and their point values separately, but to summarize:

Anticipated Total	1750-1850 points
Laboratory Reports	1000 points
Final Exam	200 points
Assignments	100-200 points
4 Hour Exams	400 points total
Participation	50 points

We reserve the right to tweak these distributions as we see fit: if for example no one appears to be doing the reading, we may institute short, sporadic quizzes. These will in all likelihood be given in the first few minutes of class, and no makeups will be given. In order for them to be taken seriously, we will have to shoehorn them into the grading scheme outlined above.

Here is the grading scale for this class:

numeric grade	letter grade
93.3 - 100	А
90.0 - 93.2	A-
86.7 - 89.9	B+
83.3 - 86.6	В
80.0 - 83.2	B-
76.7 - 79.9	C+
73.3 - 76.6	С

70.0 - 73.2	C-
66.7 - 69.9	D+
63.3 - 66.6	D
60.0 - 63.2	D-

Just to review, this is what the Student Handbook has to say about grades:

A and A-

These grades are given for achievement of the highest caliber. They reflect independent work, original thinking, and the ability to acquire and effectively use knowledge.

B+, B, and B-

These grades are given for higher than average achievement. Evidence of independent work and original thinking is expected.

C+, C, and C-

These grades are given when the student has devoted a reasonable amount of time, effort, and attention to the work of the course and has satisfied the following criteria: familiarity with the content of the course, familiarity with the methods of study of the course, and active participation in the work of the class.

D+, D, and D-

These grades are given for unsatisfactory work, below the standard expected by the College. They indicate work which in one or more important aspects falls below the average expected of students for graduation. The work is, however, sufficient to be credited for graduation, if balanced by superior work in other courses.

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Course Policies

Below you will find various course policies, including:

- Attendance
- Reading
- Extra Credit
- Lab Conduct
- Group Lab Reports
- Studying Biology
- Academic Honesty
- Accommodations

Attendance

Being in class is important. Based on past experience with this course, **it makes a difference**. Dr. Buchkovich's philosophy on attendance is as follows: She will record attendance, but she will not give points for attendance. Attendance is part of your participation grade in that you must attend to participate. If you attend, you will participate, because she will randomly call on you for your opinion on scientific matters or information from the assigned reading. When called upon, you may "pass" — simply say "pass" or "I don't know" — because you are confused, unprepared, ill, distracted, and/or do not have anything to contribute. This happens to each of us occasionally. If you "pass" Dr. Buchkovich will redirect the question to someone else. If you seldom contribute, then you will earn a lower participation grade and your friend sitting next to you may become weary of answering the questions. The class will be more interesting if we share our thoughts and questions. More on attendance and Dr. Buchkovich's responsibilities during the first class...

If you are going to be absent from class or lab, please do us the courtesy of letting us know in advance if at all possible. Don't forget that it is *your* responsibility to notify your instructors if you will be away for a field trip, sporting event, or other school-related function. It is not our responsibility to keep up with all the myriad activities which you might be involved in, according to the **Student Handbook**.

Reading

In this course, the reading is critically important. Class time will be spent discussing the reading for that day; if you don't keep up with the reading — and by that we mean **active** reading, not just using a highlighter — you won't be able

to keep up in class, you won't fully understand what's being taught, and the class will rapidly become a waste of time for you.

Extra Credit

On a 100-point hour exam, there will be 110 points-worth of questions. Thus, you can miss (nearly) 10% of the questions on any hour exam and still get the full 100 points.

Lab Conduct

There is to be **NO** food or drink in the lab at **ANY** time. Rules have gotten stricter, fines have gotten much higher, and the government is coming after undergraduate institutions like never before. If Prof. Jones sees any comestibles or potables in lab you will be docked points in accordance with his mood; if he sees you put anything into your mouth while you're in the lab, he may well dock you several hundred (yes, *hundred*) points. This is a serious infraction of laboratory protocols.

The **ONLY** exception to this policy is when we are doing experiments with food — he will let you know in advance what is permitted in these labs.

The only thing worse than eating or drinking in lab is endangering other students or their data, whether through carelessness or malice. If Prof. Jones finds anyone doing something which might result in harm to another student or compromise their experimental results, he will fail the perpetrator for the course. He is by and large a fairly easy-going guy, but there are some things which are simply beyond the pale; this is one of them.

Group Lab Reports

Certain labs will require group (rather than individual) lab reports. When submitting group reports, please be sure that you:

- Do not include the questions in your report Prof. Jones knows the questions!
- Use "we", not "I" this is to be a *group* effort.
- Include the title, date, and the names of your group members.
- Every member of the group must initial the report, indicating that they are satisfied with it and agree to its contents.

If you have any questions about this format, please don't hesitate to ask Prof. Jones.

Studying Biology

students as much as possible to study the material for this course in groups. Discussing problems, studying for exams with other students, and asking each other questions on the reading assignments are all examples of activities which will benefit you and which we encourage. Obviously you cannot consult with others during exams or quizzes, but the homework and lab reports may be something of a grey area for many of you. For this course, you must prepare your own answers to assigned problems, but we feel that getting together with

other students in the course to discuss and think through problems together is not only perfectly acceptable, it is a very good idea. If you have arrived at what you believe to be the correct answer, put it aside for fifteen minutes before writing it down; this way you can be more confident that you really know what it is you're saying, and your answers won't be identical to your partners'.

Note that the idea of collaborative learning in this way does not mean that you should ask for answers from others who have already taken this or a similar course, nor should you necessarily just accept an answer from a classmate whom you think is likely to be right. Everybody is mistaken sometimes, and if you don't understand **why** his or her answer is the right one, well, then you don't understand it. And that is not where you want to be. Conversely, if you're sure you've got the right answer, don't just tell your study group and be done with it. Try to help them arrive at the same conclusion you did step by step; someone else may come up with a very different view of the problem which forces you to rethink your approach. And rethinking your approach, even if it doesn't turn out to change your mind about your answer, is critical to your success as a scientist, lawyer, businessperson, whatever. It's one of those skills that you should be constantly honing.

Our concern is not that you "learn" biology, seeing it as a (very large) pile of facts, but that you **understand** it. Your fellow students and your instructors are resources to help you; it's up to you to do the work necessary to gain that understanding.

You should expect to spend **at least** 2 hours studying on your own for every hour in the classroom. At a **minimum**. That's true for every class, not just this one. If you're content to just slouch through, willing to trade a better grade in the course for whatever you think is more important than your studies, you're welcome to do so. But if you want to excel, not only for the sake of a higher mark on your transcript, but also for the sake of your education, you owe it to yourself to put in enough effort that you can honestly say to yourself at the end of the semester, "I did my best, and I learned as much as I could in that course." If you do, we'll do everything we can to make this a worthwhile experience for you.

Academic Honesty

We adhere to the **Academic Honesty policy** of the College. There is nothing more important to us than personal integrity — not biology, not happiness, not power, nothing — and we conduct ourselves and all of our classes in that spirit. If you're not familiar with College policy, you should be.

Accommodations

Per Moravian College policy: "Students who wish to request accommodations in this class for a disability should contact Ms. Elaine Mara, Assistant Director of Academic & Disability Support, located on the first floor of Monocacy Hall (extension 1401). Accommodations cannot be provided until authorization is received from the Academic & Disability Support office."

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Syllabus			
Meeting number	Date	In-Class	Background Reading
1	Mon., Jan. 19	organizational meeting	
2	Wed., Jan. 21	Raw materials & fuel for our bodies	chapter 2
3	Fri., Jan. 23	Raw materials (continued)	chapter 2
4	Mon., Jan. 26	The smallest part of you	chapter 3
5	Wed., Jan. 28	The smallest part (continued)	chapter 3
6	Fri., Jan. 30	From the sun to you	chapter 4
7	Mon., Feb. 2	From the sun (continued)	chapter 4
8	Wed., Feb. 4	Pathway to understanding the world	chapter 1
9	Fri., Feb. 6	Pathway (continued)	chapter 1
10	Mon., Feb. 9	review	
11	Wed., Feb. 11	Hour exam	chapters 1-4
12	Fri., Feb. 13	Harnessing the genetic code	chapter 5
13	Mon., Feb. 16	Harnessing (continued)	chapter 5
14	Wed., Feb. 18	Continuity and variety	chapter 6
15	Fri., Feb. 20	Continuity (continued)	chapter 6
16	Mon., Feb. 23	Family resemblance	chapter 7
17	Wed., Feb. 25	Resemblance (continued)	chapter 7
18	Fri., Feb. 27	review	
19	Mon., Mar. 2	Hour exam	chapters 5-7
20	Wed., Mar. 4	Darwin's dangerous idea	chapter 8
21	Fri., Mar. 6	Darwin's idea (continued)	chapter 8
	Mon., Mar. 9	No class (Spring Break)	
	Wed., Mar. 11	No class (Spring Break)	
	Fri., Mar. 13	No class (Spring Break)	
22	Mon., Mar. 16	Communication and conflict	chapter 9
23	Wed., Mar. 18	Communication (continued)	chapter 9
24	Fri., Mar. 20	Origin & biodiversity of life on earth	chapter 10
25	Mon., Mar. 23	Biodiversity (continued)	chapter 10

26	Wed., Mar. 25	Animals	chapter 11
27	Fri., Mar. 27	Animals (continued)	chapter 11
28	Mon., Mar. 30	review	
29	Wed., Apr. 1	Hour exam	chapters 8-11
	Fri., Apr. 3	No class (Easter Break)	
30	Mon., Apr. 6	Plants and fungi	chapter 12
31	Wed., Apr. 8	Plants (continued)	chapter 12
32	Fri., Apr. 10	Bacteria, archaea, protists, & viruses	chapters 13
33	Mon., Apr. 13	Bacteria (continued)	chapter 13
34	Wed., Apr. 15	Planet at capacity	chapter 14
35	Fri., Apr. 17	Capacity (continued)	chapter 14
36	Mon., Apr. 20	review	
37	Wed., Apr. 22	Hour exam	chapters 12-14
38	Fri., Apr. 24	review assignment (TBD)	
39	Mon., Apr. 27	Topic of student choice	chapter TBD
40	Wed., Apr. 29	Student choice (continued)	chapter TBD
41	Fri., May 1	review	
	Wednesday, May 4 8:30 am	FINAL EXAM	

Life is fluid, so this syllabus is subject to change. I may have to change the syllabus as the semester progresses, but this is certainly preferable to rigidly adhering to some timetable in lockstep. So come to class and you'll always know what's going on with the syllabus; changes will of course also be posted here, but you should be in class anyway!

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Assignment #1 (25 points)

Here is a link to the **pre-course survey**. Remember that your scores will not impact your grade, but will enable us to evaluate the course and your progress. Please complete this pre-course survey before Wednesday.

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	7		NO		
	Laborato	Laboratories			
Home →	Meeting number	Date	In-Class	Background Reading	
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Grading → Policies →	2	Tues., Jan. 27 Wed., Jan. 28	Biomolecules	lab protocol text sections 2-8 through 2	
Syllabus →	3	Tues., Feb. 3 Wed., Feb. 4	Microscopy	lab protocol text sections 3-1 through 3	
Exams → Assignments →	4	Tues., Feb. 10 Wed., Feb. 11	Cellular respiration	lab protocol text sections 4-12 through 4-15	
Labs → Contact →	5	Tues., Feb. 17 Wed., Feb. 18	DNA	lab protocol text sections 2-19, 2-20, and 5-10	
	6	Tues., Feb. 24 Wed., Feb. 25	Genetics	text sections 7-1 through 7	
		Tues., Mar. 3 Wed., Mar. 4	No lab		
		Tues., Mar. 10 Wed., Mar. 11	No lab (Spring Break)		
	7	Tues., Mar. 17 Wed., Mar. 18	Evolution	text sections 8-11 through 8-13 and 8-17	
	8	Tues., Mar. 24 Wed., Mar. 25	Taxonomy	text sections 10-7 through 10-9	
	9	Tues., Mar. 31 Wed., Apr. 1	Animals	lab protocol text sections 11-12 through	
	10	Tues., Apr. 7 Wed., Apr. 8	Plant physiology	lab protocol text section 4-11	
		Tues., Apr.			

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Bacterial sampling

lab protocol

	Wed., Apr. 15		
12	Tues., Apr. 21 Wed., Apr. 22	Nervous system	
	Tues., Apr. 28 Wed., Apr. 29	Lab TBA	

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Professors Buchkovich and Jones

If you ever have questions that you can't answer yourself, realize that there are a lot of resources available to you: if your classmates can't help you, feel free to ask us. This is part of our job, and one which we don't shirk. You can reach Prof. Buchkovich by email (buchkovichk [at] moravian [dot] edu) or phone (610-861-1428); her office is in Room 332¹, Collier Hall of Science. You're much more likely to reach Prof. Jones by email (he sometimes doesn't realize he has voicemail for a day or two). His email address is jonesc [at] moravian [dot] edu and his office (and lab) phone number is 610-861-1614.

Here's a copy of **Prof. Jones's current class schedule**. His official office hours are from 11 am to noon on Thursdays. That said, official hours are all but irrelevant to him. If he's not in his office (Room 310¹, Collier Hall of Science), try his lab (Room 233¹, Collier Hall of Science — between the elevator and the loading dock on the main floor). Feel free to get hold of him any time; if he can't spare the time to talk then, he'll tell you so, and we can set up an appointment at our mutual convenience.

¹The Powers That Be have decided to renumber most rooms in Collier sometime in the middle of this semester, so God only knows what it's going to end up being.

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