

BIO100

Principles of Biology

Fall 2015



BIO100 Fall 2015

Home →

Objectives →

Components →

Grading →

Policies →

Lecture Syllabus →

Exams →

Assignments →

Lab Syllabus →

Contact →

Principles of Biology

We mentioned the problem of sifting through information online and how social media can throw up a lot of questionable "information" — here's a link to a [TED-Ed presentation](#) about just that.

Classes

Lectures are held in Room 202 (Mellon Lecture Hall), Collier Hall of Science
Mondays, Wednesdays, and Fridays, 10:20 am to 11:10 am

Lab

Lab for this course meet in Room 303, Collier Hall of Science
Tuesday afternoons, 12:45 to 3:45

Text

The text required for this course is the 1st edition of *Biology for the Informed Citizen with Physiology*, by Donna Bozzone and Douglas Green (Oxford University Press, 2013).

For reasons that are not entirely clear to me, Moravian College considers this to be a personal page. Therefore it is incumbent on me to point out that "The views expressed on this page are the responsibility of the author, Christopher Jones (cjones-at-moravian-dot-edu) and do not necessarily

reflect Moravian College or Moravian Theological Seminary policies or official positions."

[[Prof. Jones' homepage](#)] [[Moravian College](#)] [[Moravian Biology](#)] [[XHTML 1.0](#)] [[CSS](#)]

BIO100
Principles of Biology
Fall 2015

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
- how to communicate about current controversies in science

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.

BIO100
Principles of Biology
Fall 2015

Course Policies

Below you will find various course policies, including:

- [Attendance](#)
- [Reading](#)
- [Late Assignments](#)
- [Extra Credit](#)
- [Lab Conduct](#)
- [Cell Phones](#)
- [Group Lab Reports](#)
- [Studying Biology](#)
- [Academic Honesty](#)
- [Tutoring](#)
- [Accommodations](#)

Attendance

Being in class is important. Based on past experience with this course, [it makes a difference](#). That's why a portion of your grade in this class will be derived from your attendance and participation. We intend this class to be heavily discussion-based, and if you are not here, not only do you not benefit from the discussion, but your classmates won't have the opportunity to benefit from your opinion. And don't forget that it is your responsibility to find out what assignments you may have missed if you are absent.

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.

Late Assignments

Assignments turned in late will accrue a 10% penalty for every 24 hours (or fraction thereof) that they are late.

Extra Credit

On a 100-point hour exam, there will be 105 points-worth of questions. Thus, you can miss (nearly) 5% of the questions on any hour exam and still get the full 100 points.

Cell phones

Cell phones can be very useful tools, but they can also be extremely powerful distractions, as you no doubt realize. In class, and especially in lab, you should not be using your cell phone unless it's directly relevant to the current activity. You should never be checking email or updating Facebook or watching cute cat videos in class or in lab, unless for some inexplicable reason your instructor has okayed that particular activity.

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 your instructor sees any comestibles or potables in lab you will be docked points in accordance with their mood; if they see you put anything into your mouth while you're in the lab, they 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 — we 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. If we find anyone doing something which might result in harm to another student, we will fail the perpetrator for the course. We are by and large a fairly easy-going folks, 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.
- When submitting a group lab report, your instructor will provide each of you with a

notecard; on this card you will be asked to evaluate the contributions of your group members to the report.

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

Studying Biology

[Science](#) is a collaborative venture. We urge you to get together with your fellow 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.

Tutoring

The Academic Support Center houses Disability Support and Greyhound Tutoring on the first floor of Monocacy Hall and can be reached at 610-861-1401. Greyhound Tutoring provides course-specific tutors to Moravian students, free of charge. If you would like to work with a Greyhound Tutor to boost your academic success, please request a tutor through <http://bit.ly/NeedTutorMC> (case-sensitive). Plan ahead! It takes 2–3 business days to connect you with a tutor. Please email Dana Wilson (wilsond@moravian.edu), Tutor Coordinator, for more information about tutoring. Please email Laurie Roth (rothl@moravian.edu), Director of Academic and Disability Support, for more information about disability support.

Accommodations

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

BIO100
Principles of Biology
Fall 2015

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 three 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 your professors to decide what is an acceptable circumstance), no make-up exams will be given. You are *strongly* encouraged to contact your professors in advance if you know you will be absent for an exam.

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 or tablet in lab is not without risks) or on paper. If you want to re-copy your notes, that's fine, but we are only concerned with your "official," written-in-lab notes.

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

Lab Reports

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

expect for each lab as they arise. Each report will be worth 50 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 all 11).

Assignments

We will give occasional miscellaneous assignments over the course of the semester.

These will be worth whatever points we announce at the time. We anticipate that there will be a total of 100 to 200 points in this category by the end of the semester.

Participation

Class participation will necessarily be somewhat subjective, but will encompass just that: participating in class. It's important that you are present; we will give you 1 point for every class session you attend in its entirety (so don't be late!). Beyond that, the remaining 80 points of the participation category will reflect active participation. You will earn these points by asking questions, answering questions, being prepared to discuss whatever topics arise — you're not children, you know what is meant by the term "participation."

BIO100
Principles of Biology
Fall 2015

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. 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:

Participation	120 points
3 Hour Exams	300 points total
Assignments	100–200 points
Final Exam	200 points
Laboratory Reports	500 points
Anticipated Total	1220–1320 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 make-ups 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	A
90.0 - 93.2	A-
86.7 - 89.9	B+
83.3 - 86.6	B
80.0 - 83.2	B-
76.7 - 79.9	C+
73.3 - 76.6	C

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.

BIO100
Principles of Biology
Fall 2015

Syllabus

Meeting number	Date	In-Class	Background Reading
1	Mon., Aug. 31	Organizational meeting	
2	Wed., Sept. 2	Cell structure	chapter 1.3, chapters 3.1–3.2
3	Fri., Sept. 4	Cell division and cancer	chapters 3.3, 3.5 (mitosis only), chapters 5.1–5.3, 5.5–5.8
4	Mon., Sept. 7	Metabolism	chapter 15
5	Wed., Sept. 9	Types of infectious agents	chapter 10 intro, chapter 14.2
6	Fri., Sept. 11	Virulence factors and transmission	chapter 10.3
7	Mon., Sept. 14	Stages of infectious disease	chapter 10.4
8	Wed., Sept. 16	Epidemiology, public health, and outbreaks	chapter 10.4, chapter 14.6
9	Fri., Sept. 18	Diseases and recent outbreaks	chapter 14.1 and assigned
10	Mon., Sept. 21	Diseases and recent outbreaks	assigned
11	Wed., Sept. 23	Hour Exam	
12	Fri., Sept. 25	Brief history, magic bullets, mechanisms of resistance	
13	Mon., Sept. 28	Sources, causes, clinical implications, phage therapy	chapter 10.2

14	Wed., Sept. 30	Video: antibiotic resistance, what we're doing	
15	Fri., Oct. 2	Video: antibiotic resistance, agricultural impacts	
16	Mon., Oct. 5	Wrap-up, discussion, new political action, updates	
17	Wed., Oct. 7	Innate and adaptive immunity	chapter 10.5, chapter 14.3
18	Fri., Oct. 9	Vaccines, risks vs. benefits	chapter 14.4–14.5, chapter 10.5
	Mon., Oct. 12	Fall Break	
19	Wed., Oct. 14	Immune system gone awry: allergy, autoimmunity, etc.	
20	Fri., Oct. 16	Immune system gone awry: allergy, autoimmunity, etc.	
21	Mon., Oct. 19	Hour Exam	
22	Wed., Oct. 21	Your microbes and how they help/hurt you	chapter 10.1 and assigned
23	Fri., Oct. 23	Microbiota and discussion	
24	Mon., Oct. 26	The Good, the Bad, and the Gluten	Diet Pill ad part 1 and part 2 Gluten interview mp3
25	Wed., Oct. 28	Genetics I	chapters 4.1–4.3
26	Fri., Oct. 30	Genetics II	chapters 4.4–4.7
27	Mon., Nov. 2	Genetics III	chapters 4.8–4.9
28	Wed., Nov. 4	Cancer genetics	chapter 5.4
29	Fri., Nov. 6	Medical genetics	chapter 8

30	Mon., Nov. 9	Ethics of human genetic intervention	assigned
31	Wed., Nov. 11	Genetic engineering I	chapters 7.1–7.4
32	Fri., Nov. 13	Genetic engineering II	chapters 7.5–7.7
33	Mon., Nov. 16	Who's afraid of GMOs?	assigned
34	Wed., Nov. 18	Hour Exam	
35	Fri., Nov. 20	Facts vs. fiction, mutations, natural selection	chapter 9
36	Mon., Nov. 23	Speciation, evidence of evolution, human adaptations	chapter 9 intro, chapter 9.1, 9.3
	Wed., Nov. 25	Thanksgiving Break	
	Fri., Nov. 27	Thanksgiving Break	
37	Mon., Nov. 30	Evolution and disease, wrap-up	chapter 9, chapter 10.5
38	Wed., Dec. 2	Species interactions	chapters 16.1–16.4
39	Fri., Dec. 4	Ecosystems and us	chapters 16.5–16.7
40	Mon., Dec. 7	Biodiversity I	chapters 17.1–17.5
41	Wed., Dec. 9	Biodiversity II	chapters 17.6–17.10
42	Fri., Dec. 11	Human population growth	chapter 18
	Thurs., Dec. 17 8:30 am	FINAL EXAM	

Life is fluid, so this syllabus is subject to change. We 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!

BIO100
Principles of Biology
Fall 2015

Laboratories

Meeting number	Date	In-Class	Background Reading
1	Tues., Sept. 1	lab policies & practices Scientific method	
2	Tues., Sept. 8	Microscopy	lab protocol
3	Tues., Sept. 15	Epidemiology & Bacterial Sampling	
4	Tues., Sept. 22	Epidemiology & Bacterial Sampling (continued)	
5	Tues., Sept. 29	Disinfectants & Antibiotics	
6	Tues., Oct. 6	Disinfectants & Antibiotics (continued)	
	Tues., Oct. 13	No lab (Fall Break)	
7	Tues., Oct. 20	Making Yogurt	
8	Tues., Oct. 27	Biomolecules	lab protocol review section 15.1 in the text
9	Tues., Nov. 3	Genetics	review section 4.4 in the text
10	Tues., Nov. 10	DNA	lab protocol review section 4.6 in the text
11	Tues., Nov. 17	GMOs	review sections 7.3–7.6 in the text
12	Tues., Nov. 24	Evolution & Taxonomy	

13	Tues., Dec. 1	Evolution & Taxonomy (continued)
14	Tues., Dec. 8	TBA

BIO100
Principles of Biology
Fall 2015

Professors Mosovsky 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. Mosovsky by email (mosovskyk [at] moravian [dot] edu) or phone (610-861-1428); her office is Room 311, Collier Hall of Science. Her open office hours are from 3:30 to 4:30 Monday and Wednesday, and from 2 to 3 pm Thursday and Friday.

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 11:30 am to 12:30 pm on Mondays. That said, official hours are all but irrelevant to him. If he's not in his office (Room 319, Collier Hall of Science), try his lab (Room 227, 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 you can set up an appointment at our mutual convenience.