

## Foundations in Biology 105/115 - Summer 2015

**Lecture:** MTRF 8:15 AM – 10:15AM, Regents 239

**Lab:** MTRF 10:30 AM – 1:10PM, Regents 361

Welcome to Foundations in Biology! This syllabus provides essential information about the course. You are responsible for knowing this information, so please read it carefully.

### ***Instructor Info:***

Professor: Dr. Erica Gerace  
375 Regents Hall  
eg682@georgetown.edu  
202-687-5639  
Office Hours: Tuesdays & Thursdays, 1:30-2:30pm

### Teaching Assistants:

Kristin Spitz  
kms325@georgetown.edu

Joie Stoopack  
jes305@georgetown.edu

### ***Materials:***

- Textbook – Biology: How Life Works 1<sup>st</sup> Edition, by Morris, Hartl, Knoll & Lue
- Course Notebook - 3 ring binder or folder – for notes and handouts
- Lab Notebook – something that you set aside for taking scrupulous notes in lab each week. We don't care what it looks like; it can be a part of your course binder or something separate.
- A multi-color pen (e.g. Bic 4 color) for the ability to take more detailed notes.

***Attendance:*** You are expected to attend every class, and lab. Period. Attendance will be taken in the lecture portion of the class in form of a sign-in sheet in order to keep a record; however, attendance is not absolutely required for this portion of the class. Keep in mind that this is an extremely fast-paced class and attendance is essential for a strong performance. PowerPoint slides will be provided on Blackboard, but occasionally whiteboard talks and explanations will be used in class and thus the posted slides will not cover this detail. Attendance will be taken in lab and will count toward your laboratory grade. Lateness will not be tolerated in the laboratory sessions; points will be deducted from your pre-lab and/or participation grade for the laboratory if you are late.

***Getting your Questions Answered:*** ALL questions are valuable and are important to ask if you need help. Don't let yourself fall behind in understanding!

Jump right on it and get help as soon as you need it. Dr. Gerace will hold biweekly office hours, but e-mail can also result in quick responses to questions.

**Learning Goals:** The Department of Biology has ten broad learning goals (5 content and 5 process goals) for the 4-year curriculum. The two semesters of Foundations of Biology share responsibility for introducing each of the ten learning goals as a means to build your biological 'foundation'.

In this course, evolution is an ever-present theme, influencing how we consider each of the 5 content goals from the perspective of molecules, cells, and organisms. We begin the course considering the organization of molecules and cells (goal 6), focus next on the flow of biological information in our molecular unit (goal 8), briefly think about cellular metabolism (goal 9), and conclude by discussing cellular and environmental interactions in our units on genetics, development, and physiology (goals 6 and 10).

In this course we also begin to engage you in the process of science – largely, but not exclusively through your work in the lab, where you will design and conduct your own experiments, perform quantitative and qualitative analyses of your data, write and speak about your science with peers and teachers, and above all embrace the broader ethos of biology.

**Grading:** Although you are registered for two separate courses, Biol-105 and Biol-115, this separation is done solely to facilitate course enrollment. Within the course, the lecture and lab are parts of one integrated whole. Therefore, we will assign a single grade for the course that will appear on your transcript under both Biol-105 and Biol-115. The grade is determined by the following:

100 points\* - Exam 1 on Lectures 1-4 (Monday, July 13<sup>th</sup>, 8:15-9:15 am)  
100 points\* - Exam 2 on Lectures 5-8 (Monday, July 20<sup>th</sup>, 8:15-9:15 am)  
100 points\* - Exam 3 on Lectures 9-12 (Monday, July 27<sup>th</sup>, 8:15-9:15 am)  
150 points - Exam 4 on Lectures 13-18 (Friday, August 7<sup>th</sup>, 8:15-10:15 am)  
80 points - Problem Sets  
250 points - Lab Work and Lab Writings  
780 points

\*Because it's possible you may underperform on one exam (we all have moments when we blank out), when calculating your final grade, the lowest score of Exams 1-3 will count for 75 points (percentage out of 100 multiplied by 75 points) and the highest score of Exams 1-3 will count for 125 points (percentage out of 100 multiplied by 125 points).

**Course Grades:**

The following guideline is used to calculate end-of-semester grades:

A ≥ 93.0%

90.0% ≤ A- < 93.0%

87.0% ≤ B+ < 90.0%  
83.0% ≤ B < 87.0%  
80.0% ≤ B- < 83.0%  
77.0% ≤ C+ < 80.0%  
73.0% ≤ C < 77.0%  
70.0% ≤ C- < 73.0%  
65.0% ≤ D < 70.0%  
F < 65.0%

**Lab:**

There is a daily, required lab. Not attending lab will have a significantly negative impact on your grade. Because lab follows the subject matter of the lecture, it will allow you to encounter science much more vividly than you can via a textbook. It will allow you to do and think about the process of science rigorously and creatively, and to work collaboratively with your peers. Lab here is not about getting the right answer or ‘finishing’. A well-done experiment may provide insight (never answers) but usually just raises more questions and initiates new experiments.

Our goal is for you to slow down & observe, be rigorous & creative, think & do. Don’t stress about how far or fast you are going. But be sure to think carefully about everything you are doing as you move along. Your lab papers will need to reflect the quality of your thinking and how well you understand what you did, why you did it, and what you learned from it (about the science and your scientific process).

One really important trick is to think of the lab as a 2.5-hour review session. We have carefully designed the labs to illuminate many, many of the big ideas in lecture. So the first lab deals with enzymes, carbohydrates, proteins, monomers, polymers, energetics of reactions, functional group activity . . . that’s really, about 75% of the content of our first unit. So, as you work in lab, slow down and keep trying to relate what is happening in the test tube (or under the microscope or on t gel) to the underlying concepts. It is a great way to practice applying your knowledge.

All lab papers (with the exception of the Frog Lab Notebook) must be submitted using Turnitin Blackboard by the time and date dictated in the lab manual. Late assignments turned in on the same day will receive a 5% deduction, and there is a 10% deduction for each day thereafter.

**Exams:**

All exams are innately cumulative. This means that while the questions on each exam will focus on the most recent material and lectures specified, the concepts build on each other and you will be expected to be able to integrate ideas throughout the term. The exams are designed to take 60 minutes. If you require

extra time on exams or special testing conditions, please be sure to see the Academic Resource Center (3rd floor Leavey Center) to complete the required paperwork. If you cannot take an exam on the designated day, you must get permission in advance from Dr. Gerace to take a make-up exam. The ONLY acceptable excuses are a major family engagement (wedding, funeral, etc), or serious personal illness (with doctor's note). An abundance of other assignments/work is regrettable but NOT a valid excuse.

If you disagree with the grading of a question, after careful scrutiny of the posted key, you can submit a written request for a re-grade. In your request, clearly explain why your answer merits more credit than it received. Re-grade requests must be submitted within two days of when exams are returned.

***Reading Assignments and Daily Dozens:***

There are daily reading assignments from our textbook and you are highly encouraged to read the material before coming to lecture. This class is fast-paced and reading in advance will introduce the concepts that the lectures will then emphasize. Do not save the reading until the night before the exam!

Daily Dozen questions will be handed out during every lecture in addition to being posted on Blackboard. These questions are designed to emphasize the important concepts discussed during each lecture topic. They can help you to review, study, and discern which information is most important. These questions will NOT be graded and therefore, it is optional if you want to complete them or not. Answers to these questions will *not* be posted; you are encouraged to complete these questions after each lecture and if you have questions or need clarification please ask during the next lecture, in office hours, or in a lab session.

***Problem Sets:***

There will be weekly problem sets to reinforce the concepts taught in the lecture. The problem sets will be graded and will total 80 points towards your final grade. Take the time to do these thoroughly! Be sure that you can write a solid explanation for each of your answers, even though the format is T/F or multiple choice, as these are great practice for the exams. You are encouraged to work together with your classmates on the problem sets, as they should inspire discussion of the concepts. Seek help if you get stuck. There will be plenty of time in lecture, lab sessions, and at office hours to discuss the questions with your classmates and instructors. The problem set answers must be submitted on Blackboard by the time and date they are due (Saturdays 7/11, 7/18, 7/25, and Wednesday 8/4 by 11:59 pm). No late assignments will be accepted. Answers will be posted on Blackboard after the due date.

***Honor Code:***

Georgetown's honor code prohibits academic dishonesty – including cheating, plagiarism and false citations – and all suspicion of plagiarism will be reported to the Honor Council. To quote the honor guide:

- (1) “Cheating is the use or attempted use of unauthorized materials, information, study aids, or unauthorized collaboration on in-class examinations, take-home examinations, or other academic exercises.” Cheating is an honor code violation for both the giver and the receiver of information. Specific instructions will be provided when collaboration is encouraged/required; if it is unclear – ask! Do not make assumptions. On all assignments, provide the name of all students who have contributed intellectually to the assignment.
- (2) “Plagiarism is the act of passing off as one’s own the ideas or writings of another.” And “False citation is the attribution of intellectual property to an incorrect or fabricated source with the intention to deceive.” Please use proper citation guidelines and make correct attribution of all cited information to give credit to the original source.

To be clear about how we are vigilant we are about academic dishonesty:

- (1) All bookbags, backpacks, cell phones and other electronic devices will be left at the front of the exam rooms. You will be allowed two pens for the exam.
- (2) All exams will be photocopied before they are returned to you.
- (3) All written work must be submitted using Turnitin (on Blackboard).

Be smart. I have encountered instances of plagiarism at Georgetown, and several points have emerged worth noting:

- (1) Plagiarism typically results from last-minute pressures to complete an assignment. Stay on top of your work and/or work ahead of schedule!
- (2) Boundaries between collaborative and individual work can seem blurry. Be sure to ask if this is unclear.
- (3) All experiences that I have had with the Honor Council have been thoughtful and respectful – yet uncomfortable for all those involved.

If you find yourself stuck and feel desperate about a deadline and see no other option but to take a short cut, STOP and contact Dr. Gerace. No grade is worth sacrificing your integrity and the consequences are far more severe than whatever the assignment point value. We can work it out together in a way that will allow you to turn in honest work.

Exams, you must sign the University Honor Pledge:

*In the pursuit of the high ideals and rigorous standards of academic life, I commit myself to the respect and uphold the Georgetown University Honor System: To be honest in any academic endeavor, and to conduct myself honorably, as a responsible member of the Georgetown community, as we live and work together.*

**Class Schedule:**

Lecture #	Date	Lecture Topic	Reading	Lab	Due
<b>Week 1</b>					
1	Mon July 6 <sup>th</sup>	Basics of biochemistry, reactions and enzymes	Chapter 1, 2.1-2.5, & 6.5	Enzyme Lab – Part 1	--
2	Tues July 7 <sup>th</sup>	Biomolecules: Proteins, Carbohydrates, Lipids & Nucleic Acids	Chapter 2.5, 3.1, 3.2, & 5.1	Enzyme Lab – Part 2	--
--	Wed July 8 <sup>th</sup>	No Class			
3	Thurs July 9 <sup>th</sup>	Membranes, Cell Structure and Function	Chapter 5	Enzyme Lab – Part 3	--
4	Fri July 10 <sup>th</sup>	Cell Structure and Function Part 2 & Review	Chapters 9 & 10	Enzyme Lab – Part 4	--
--	Sat July 11 <sup>th</sup>	--	--	--	Problem Set #1
<b>Week 2</b>					
5	Mon July 13 <sup>th</sup>	<b>EXAM I – Lectures 1-4</b> Cell Signaling	-- Chapter 9	Cell Lab – Part 1	--
6	Tues July 14 <sup>th</sup>	Cell Energetics	Chapters 6 & 7	Cell Lab – Part 2	Enzyme Lab paper
--	Wed July 15 <sup>th</sup>	No Class			
7	Thurs July 16 <sup>th</sup>	Cell Cycle & Mitosis	Chapter 11	Cell Lab – Part 3	--
8	Fri July 17 <sup>th</sup>	DNA Replication & Review	Chapter 12.1 & 12.2	Cell Lab – Part 4	--
--	Sat July 18 <sup>th</sup>	--	--	--	Problem Set #2
<b>Week 3</b>					
9	Mon July 20 <sup>st</sup>	<b>EXAM II – Lectures 5-8</b> Transcription Part 1	Chapter 3.3, 3.4, & 19	Molecular Micro Lab – Part 1	
10	Tues July 21 <sup>st</sup>	Transcription Part 2 & Regulation of Gene Expression	Chapters 19 & 20	Molecular Micro Lab – Part 2	Cell Lab Paper
--	Wed July 22 <sup>nd</sup>	No Class			
11	Thurs July 23 <sup>th</sup>	Translation	Chapter 4	Molecular Micro Lab – Part 3	--
12	Fri July 24 <sup>th</sup>	Gene Expression During Development & Review	Chapter 20	Frog Lab – Part 1	--
--	Sat July 25 <sup>th</sup>	--	--	--	Problem Set #3

Week 4					
13	Mon July 27 <sup>th</sup>	<b>EXAM III – Lectures 9-12</b> Genetic Variation & Meiosis	Chapter 11.3, 14 & 15	Frog Lab – Part 2	
14	Tues July 28 <sup>th</sup>	Genetics I: Mendelian Genetics	Chapter 16	Frog Lab – Part 3	Mol Micro Lab Paper
--	Wed July 29 <sup>th</sup>	No Class			
15	Thurs July 30 <sup>th</sup>	Genetics 2: Linkage, Sex Chromosomes & Beyond Mendel	Chapters 17 & 18	Frog Lab – Part 4 & A&P Lab data collection	--
16	Fri July 31 <sup>st</sup>	Anatomy & Physiology – Endocrine System & Kidney Function	Chapter 28 (skim), 38 & 41	Frog Lab – Part 5 & Intro to Stats	--
Week 5					
17	Mon Aug 3 <sup>rd</sup>	Anatomy & Physiology – Nutrition, Digestion & Metabolism	Chapter 40	Anatomy & Phys – Part 1	Frog Lab Notebook
18	Tues Aug 4 <sup>th</sup>	Immune System	Chapter 43	Anatomy & Phys – Part 2	Problem Set #4
--	Wed Aug 5 <sup>th</sup>	No Class			
--	Thurs Aug 6 <sup>th</sup>	Review Day		Anatomy & Phys – Part 3	
--	Fri Aug 7 <sup>th</sup>	<b>EXAM IV – Lectures 13-18</b>		None	A&P paper

*NOTE: Schedule is subject to change with prior notice.*