

<p><b>Biology 155Q – Applications and Communications in the Biological Sciences</b> <b>Course Syllabus</b> <b>Spring 2013</b></p>
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**Faculty Information:** Dr. Nitya Jacob, *Office:* Room 104, Pierce Hall; *Phone:* 770-784-8346  
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**Lecture:** MWF 1:15-2:20 PM, Room 101, Pierce Hall

**Laboratory:** Monday, 2:30-5:30 PM, Room 119, Pierce Hall

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**Required Books:**

- 1) *Biology for a Changing World* by Michele Shuster, Janet Vigna, Gunjan Sinha, and Matthew Tontono. 2012. WH Freeman, New York.
- 2) *The Immortal Life of Henrietta Lacks* by Rebecca Skloot. 2010. Crown Publishers, New York.
- 3) *Custom Laboratory Manual* – available on first day of laboratory.

**Readings:** Specific chapters or pages from the required books will be assigned periodically (see schedule). Electronic copies of additional readings will be provided on the course Blackboard site ([classes.emory.edu](http://classes.emory.edu)) when applicable. The correct laboratory exercise MUST be read PRIOR to each laboratory.

**Course Objectives:** The purpose of this course is to introduce you to the world of biology through applied topics such as living organisms, genetics, human health, evolution, and the environment which are particularly relevant to human life and society. The scientific foundations of these topics will be closely studied. These topics are conveyed to the public by various means - scientific research papers, newspaper or magazine articles, books, documentaries, radio programs and popular culture. We will examine and critique these sources of communication. In addition, you will also learn to write or communicate scientific information yourself using more than one method. In the laboratory you will gain hands-on experience with experiments that are conducted in the areas of biology that we will cover this semester. This course fulfills the general education requirement for a laboratory science (SNT with lab), the continuing writing requirement (WRT), and Ways of Inquiry (INQ). This course does not fulfill any requirements towards biology or other science majors but covers information that is very useful for students majoring in the sciences.

*This syllabus, particularly the schedule, may be changed at any time with some advanced notice. You will be notified of any changes in the classroom, through email, or through the Blackboard site. It is your responsibility to pay close attention to any changes. **All assigned readings (from books or additional materials on Blackboard) must be completed PRIOR to the day of the class that uses that reading.***

### **Biology 155 - Lecture and Laboratory Schedule Spring 2013**

<b>Date</b>	<b>Topic</b>	<b>Assigned Reading</b>
W, Jan 16	Science, Biology, and The World	
F, Jan 18	Thinking scientifically	Angier: pp. 1-46 (Blackboard)
M, Jan 21	MLK Jr. HOLIDAY - no class and no lab	
W, Jan 23	Science and Life	Shuster: Chapter 1
F, Jan 25	Living organisms	Shuster: Chapter 2
	<u>Assignment 1 due:</u> short essay on science	
M, Jan 28	Composition of living organisms	Shuster: Chapter 3
M, Jan 28	Laboratory 1 - Thinking Scientifically I	Exercise 1 (Blackboard/manual)
W, Jan 30	Genes and proteins	Shuster: Chapters 7, 8
F, Feb 1	Genes, proteins and the whole organism	Shuster: Chapters 7, 8
M, Feb 4	Film: The Human Genome	
M, Feb 4	Laboratory 2 - Thinking Scientifically II	Exercise 2
W, Feb 6	The conundrum of the human genome	Shuster: Chapter 11
F, Feb 8	The human genome	Shuster: Chapter 11
	<u>Assignment 2 due:</u> summary of a scientific research paper	
M, Feb 11	Genetics and human disease	Shuster: Chapter 11
M, Feb 11	Laboratory 3 - The human genome I	Exercise 3
W, Feb 13	Scientific literature research	
F, Feb 15	Discussion - Henrietta Lacks Part I	Skloot: pp. 1-86
	<u>Assignment 3 due:</u> Questions and Reflections I	
M, Feb 18	Genetic technology and improving life	Blackboard reading - Loomis
M, Feb 18	Laboratory 4 - The human genome II	Exercise 4
W, Feb 20	Genetic technology and improving life	Blackboard reading - Loomis
F, Feb 22	<b>EXAM 1 (covers topics from Jan 16-Feb 15)</b>	
M, Feb 25	Genetic engineering	Blackboard reading - Loomis
M, Feb 25	Laboratory 5 - Genetic engineering	Exercise 5
W, Feb 27	Stem cells	Shuster: Chapter 13
F, Mar 1	Stem cells	Shuster: Chapter 13
	<u>Assignment 4a due:</u> scientific research paper draft (labs 3 and 4)	

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Date	Topic	Assigned Reading
M, Mar 4	Gene Therapy	Blackboard reading - Loomis
M, Mar 4	Laboratory Exam 1 (covers labs 1-5)	
W, Mar 6	Gene Therapy	Blackboard reading
F, Mar 8	Human health and industry	
M, Mar 12 – F, Mar 16	***Spring Break***	
M, Mar 18	Field trip: research lab (Pre-laboratory assignment due)	
M, Mar 18	Laboratory 6 – Field trip: research lab	Exercise 6
W, Mar 20	Personalized medicine	
F, Mar 22	Discussion – Henrietta Lacks Part II	Skloot: pp. 89-176
	<u>Assignment 5 due:</u> Questions and Reflections II	
M, Mar 25	Evaluating news articles; preparing for oral reports	
M, Mar 25	Laboratory 7 – Cells, Cell culture, and HeLa	Blackboard Reading
W, Mar 27	The diversity of life	Shuster: Chapters 18, 19
F, Mar 29	EXAM 2 (covers topics from Feb 18-Mar 22)	
M, Apr 1	The diversity of life	Shuster: Chapters 18, 19
	<u>Assignment 4b due:</u> scientific paper final version (labs 3 and 4)	
M, Apr 1	Laboratory 8 - Biodiversity of organisms I	Exercise 8
W, Apr 3	Understanding Evolution	Shuster: Chapter 14
F, Apr 5	Evolution and Evidence	Shuster: Chapter 16
	<u>Assignment 6 due:</u> Short report partnerships and plans	
M, Apr 8	Evolution and Evidence	Shuster: Chapter 17, 20
M, Apr 8	Laboratory 9 – Biodiversity of organisms II	Exercise 9
W, Apr 10	Sustainable life	Shuster: Chapters 23, 24
	<u>Assignment 7 due:</u> news article	
F, Apr 12	Sustainable life	Shuster: Chapters 23, 24
M, Apr 15	The Importance of Conservation	Blackboard Reading
M, Apr 15	Laboratory Exam 2 (covers labs 6-9)	
W, Apr 17	The Importance of Conservation	Blackboard Reading
F, Apr 19	Discussion – Henrietta Lacks Part III	Skloot: pp. 179-267

## **Biology 155 – Lecture and Laboratory Schedule Spring 2013**

<b>Date</b>	<b>Topic</b>	<b>Assigned Reading</b>
M, Apr 22	Atlanta Botanical Gardens	
M, Apr 22	<i>Laboratory 10 – Field Trip: Atlanta Botanical Gardens</i>	
W, Apr 24	Student Short Oral Reports	
	<u>Assignment 8 due:</u> Short report, slides, bibliography	
F, Apr 26	Student Short Oral Reports	
M, Apr 29	Discussion – Henrietta Lacks Part III	Skloot: pp. 268-310
	<u>Assignment 9 due:</u> Questions and Reflections	
M, Apr 29	<i>Laboratory - Science and the importance of communication</i>	

**\*\*FINAL EXAMINATION\*\* Monday, May 6, 9AM-12PM**

**(covers topics from March 25-April 29 and comprehensive questions)**

## GUIDE TO BIOLOGY 155Q

*Please read this syllabus carefully and please be sure that you understand it very well. Continue to refer to it regularly through the semester. I will expect that you have read it thoroughly.*

**Ways of Inquiry (INQ):** Biology 155 is designated as a “Ways of Inquiry” or INQ course. In INQ courses, students “understand and question the way knowledge is sought by actively learning and practicing the discipline’s approaches to inquiry” (INQ Vision Statement). In Biology 155, you will have many opportunities to engage in and discover knowledge through biological inquiry by asking questions, designing experiments, reading and writing critically, evaluating communications, and working independently to seek knowledge.

### **What is the secret to success in Biology 155?**

*The following list of tips is very critical to your success in this course. Keep referring back to this list from time to time to make sure that you understand what it takes to achieve excellence in this course.*

- \* **Take good notes in class!** This is THE **most important** tip for success. Taking detailed, organized notes is the key to your learning process and for a successful performance in this course, particularly on tests. Fundamental scientific knowledge that you are expected to know on tests will be covered in class and may not be in your readings. The readings are meant to enhance or support information that was covered in class but should not be your primary source of information and study material.
- \* **Attend class regularly and on time!** There is a **FIRM attendance policy**, including tardiness, for this course. Only 4 unexcused absences are permitted after which a penalty applies. There are no unexcused absences in the laboratory – a point penalty applies on the first absence and the second absence can lead to **failure** of the course. Read the attendance policy carefully for all details.
- \* **Be fully engaged and participate.** Be fully **ALERT** in the classroom and be ready to participate. Your valuable intellectual contributions in discussions and your attentiveness to the material covered in class are very important to your success.
- \* **Complete all readings regularly.** You must complete the readings **PRIOR** to the class and laboratory period. Be ready to contribute your knowledge or questions in the classroom.
- \* **Complete all assignments on time!** There are two lecture exams, two laboratory exams, readings, multiple writing assignments, and an oral assignment. Prepare a **time table** of deadlines and assignments and be well organized. Instructions for assignments will be posted on Blackboard.
- \* **Communicate clearly.** Please communicate with me clearly about any questions, problems or issues regarding this course. I can be more understanding of difficulties if your communication is clear and in

advance. I am also available to answer questions as you are studying the material for the course, please communicate regularly.

**Blackboard Site:** There is a Blackboard site for this course. Please go to [classes.emory.edu](https://classes.emory.edu) for access. Check the site regularly for readings, assignment instructions, and other messages.

**Honor Code:** All of your work in this course comes under the regulations of the Honor Code. Please follow the Honor Code and include your signature on your work as your pledge. Plagiarism is a serious academic offense.

**Exam Protocol:** Do not come to any exam with notecards in your pockets or on your person. All cell phones are to be turned off and either in your bag in the front of the room or on the instructor's bench. Do not write notes or study material, or anything that could be construed as these, on your body. Check for such notations and remove before the exam time. These are considered to be a breach of the Honor Code.

**Attendance Policy:** The Biology department has a firm absence policy – please see the attached handout. Absences (or tardiness counting as absences) can result in a grade penalty or failure so please be fully aware of the policy.

**Laboratory:** This is a laboratory course and therefore the laboratory is a critical part of the course. You will be tested on laboratory knowledge in the laboratory exams. You are expected to read each exercise thoroughly and be fully prepared for each lab. Your attendance in laboratory is **REQUIRED**; absences can lead to failure of the course (see absence policy). There are certain **safety guidelines** to follow in the laboratory – please refer to the sheet attached at the end of the syllabus BEFORE you come to the lab.

**Writing Assignments:** This is a writing-intensive course and there are multiple writing assignments. Be aware that a writing product that is excellent both in content and in form earns the highest grade. It takes time to improve writing as you go along. If you are advised to consult the writing center to improve your writing, please take this seriously. Consult the syllabus for the date when each assignment is due. Specific guidelines will be posted on Blackboard under the “Assignments” tab. All assignments must be submitted in hard copy and via Safe Assign on Blackboard (Assignments tab).

**Short Oral Reports:** Towards the end of the semester you will work with a partner on a communication production that has to be presented to your peers with visual aids and a bibliography. Details will be given a few weeks prior to the due date.

**Cell Phones:** The use of cell phones is strictly prohibited in the classroom and the laboratory. Please turn off your phone before you come to class and leave your phone at the front of the room during exams. Photography and using calculators on phones is also prohibited.

**Personal Computer:** If you would like to take notes on your personal laptop or tablet in class you must seek special permission from the instructor. Use of computers for surfing the web, Facebook, Skype, working on other classes, or other networking/chat during class is **completely unacceptable**.

**Campus Lectures:** We will have the special opportunity this semester to have guest lecturers on campus. You are encouraged to attend. Details will be provided closer to the time of these lectures.

**College-Wide Assessment:** Student work submitted as part of this course may be reviewed by Oxford College and Emory College faculty and staff for the purposes of improving instruction and enhancing Emory education.

**Evaluation:** *Please remember that grades are earned and not given!* Please pay careful attention to the evaluation criteria for this course below. Your final grade is determined by the total number of points (out of 625) that you earn through the course of the semester.

**Evaluation Points:**

Lecture exams (2)	200 points
Laboratory exams (2)	100 points
Final exam	150 points
Science essay	10 points
Scientific paper summary	10 points
Scientific paper draft	10 points
Scientific paper	25 points
News article questions	5 points
News article	20 points
Henrietta Lacks Discussions	60 points
Class participation and discussion	10 points
Oral report and bibliography	20 points

**Total points: 625 points**

**Final grade determination** *(Plus and minus final grades are given)*

90 - 100%	A		
80 - 89%	B		
70 - 79 %	C		
60 - 69%	D	<60	F