Biology 155Q – Applications and Communications in the Biological Sciences
Course Syllabus
Spring 2016

Faculty Information: Dr. Nitya Jacob, *Office*: Room 320, Oxford Science Building (OSB); *Phone*: 770-784-8346; *Email:* njacob@emory.edu
Office Hours: Tuesday 1:30-2:30 PM or by appointment

Lecture: MWF 9:30-10:35 AM, Room 201, OSB
Laboratory: Wednesday, 2:30-5:30 PM, Room 317, OSB

Required Books:

1) Biology for a Changing World by Michele Shuster, Janet Vigna, Gunjan Sinha, and Matthew Tontonoz. 2nd Edition. 2014. WH Freeman & Scientific American, New York.

2) *The Immortal Life of Henrietta Lacks* by Rebecca Skloot. 2010. Crown Publishers, New York.

3) *Custom Laboratory Manual* – available in the 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) when applicable. The correct readings must be read PRIOR to each class or laboratory session. NOTE – the text will be used mostly as a supplement to your knowledge; your class notes are the most important reference you will need for this class.

Course Objectives: The purpose of this course is to introduce you to the **applied world** of biology – the natural environment, biotechnology, human health, agriculture, evolution, ethical implications, and human interaction with the environment. The **scientific foundations** of these topics will be closely studied. Relevant issues within these topics are **publicly communicated** through various media - scientific research papers, newspaper or magazine articles, books, documentaries, radio programs, literature, and popular culture. You will learn to **critique** these sources of communication and 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. It is your responsibility to pay close attention to any changes communicated by the instructor.
All assigned readings (from books or additional materials on Blackboard - BB) must be completed PRIOR to the day of the class that uses that reading.

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Lecture Schedule Spring 2016

Date	Topic	Assigned Reading
W, Jan 13	Science, Biology, and The World	
F, Jan 15	Thinking scientifically (no class)	Shuster: Chapter 1; Angier: pp. 1-46 (BB)
M, Jan 18	MLK Jr. HOLIDAY – no class	
W, Jan 20	Science and Life	Shuster: Chapter 1
	Assignment 1 due: essay on science	
F, Jan 22	Living organisms	Shuster: Chapter 2
M, Jan 25	Composition of living organisms	Shuster: Chapters 2,3
W, Jan 27	Composition of living organisms	Shuster: Milestone M1
F, Jan 29	Phenotype and Proteins	Shuster: Chapters 8
	Assignment 2 due: summary of a scientific research paper	
M, Feb 1	Phenotype-Proteins-Genes-DNA	Shuster: Chapters 7, 8
W, Feb 3	The human genome	Blackboard Reading
F, Feb 5	Film: The Human Genome	
M, Feb 8	Genetics and human disease	Shuster: Chapter 11,12; Milestone M3
W, Feb 10	Scientific literature research	
F, Feb 12	Discussion – Henrietta Lacks Part I	Skloot: pp. 1-86
	Assignment 3 due: Questions and Reflections I	
M, Feb 15	Genetic technology and improving life	*Blackboard reading*
W, Feb 17	Genetic technology and improving life	
F, Feb 19	**EXAM 1 (covers topics from Jan 13-Feb 17)**	
M, Feb 22	Genetic engineering	*Blackboard reading*
W, Feb 24	Stem cells	Shuster: Chapter 13
F, Feb 26	Stem cells	Shuster: Chapter 13
M, Feb 29	Gene Therapy	*Blackboard reading*
W, Mar 2	Gene Therapy	
F, Mar 4	Communication critique; guidelines for presentation	
	Assignment 4 (draft) due: scientific research paper draft	
	(Labs 1,2 - experiment)	

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Date	Topic	Assigned Reading
M, Mar 7 – F, Mar 11	***Spring Break***	
M, Mar 14	Discussion – Henrietta Lacks Part II	Skloot: pp. 89-176
	Assignment 5 due: Questions and Reflections II	
W, Mar 16	Human health and industry	
F, Mar 18	Personalized medicine	*Blackboard reading*
M, Mar 21	The diversity of life	Shuster: Chapters 18, 19
	Assignment 4b due: scientific paper final version (Labs 1,2 experiment)	
W, Mar 23	The diversity of life	Shuster: Chapters 18, 19
F, Mar 25	Writing a news article	
M, Mar 28	Understanding Evolution	Shuster: Chapter 14
W, Mar 30	Evolution and Evidence	Shuster: Chapter 16
F, Apr 1	**EXAM 2 (covers topics from Feb 22-Mar 18)**	
M, Apr 4	Evolution and Evidence	Shuster: Chapter 17, 20
W, Apr 6	The Importance of Conservation	*Blackboard Reading*
	Assignment 6 due: Presentation partnerships and proposal	
F, Apr 8	The Importance of Conservation	
M, Apr 11	Sustainable life	Shuster: Chapters 23, 24
Apr 13	Sustainable life	Shuster: Chapters 23, 24W,
F, Apr 15	Discussion – Henrietta Lacks Part III	Skloot: pp. 179-267
	Assignment 7 due: Questions and Reflections	
M, Apr 18	Discussion – Henrietta Lacks Part III	Skloot: pp. 268-310
W, Apr 20	Presentations	
	Assignment 8 due: video, bibliography	
F, Apr 22	Presentations	
M, Apr 25	Examining the Big Picture	
Communication critique		*Blackboard readings - Articles*

****FINAL EXAMINATION** Friday, April 29, 9AM-12PM**
(covers topics from March 25-April 18 and some comprehensive questions)

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Laboratory Schedule Spring 2016

Dr. Nitya Jacob – Room 317 (Wednesdays)

Date	Topic	Assigned Reading
W, Jan 20	Scientific Thinking - Experiment Design	Exercise 1
W, Jan 27	Scientific Thinking – Experiment Implementation	Exercise 2
W, Feb 3	Scientific Thinking – Data Collection and Presentation	Exercise 3
W, Feb 10	Analysis of the Human Genome - Part I	Exercise 4
W, Feb 17	Analysis of the Human Genome – Part II	Exercise 5
W, Feb 24	**Laboratory Exam 1 (covers labs 1-5)**	
W, Mar 2	Field Trip – Winship Cancer Institute	BB Reading
W, Mar 9	SPRING BREAK	
W, Mar 16	Genetic Engineering – GFP	Exercise 6
W, Mar 23	Cells, Cell culture, and HeLa	Exercise 7
W, Mar 30	Biodiversity of organisms – Part I	Exercise 8
W, Apr 6	Biodiversity of organisms – Part II	Exercise 9
W, Apr 13	**Laboratory Exam 2 (covers labs 6-9)**	
W, Apr 20	Field Trip - Atlanta Botanical Gardens	Review Exercise 9

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 **timeline** 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 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).

Presentations: 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 as the semester progresses.

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.**

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	20 points
Scientific paper summary	20 points
Scientific paper draft	10 points
Scientific paper	25 points
News article exercise	10 points
Henrietta Lacks Discussions	60 points
Overall class participation	10 points
Presentation	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