

BIOL 3340 SYLLABUS

BIOL 3340: CELL BIOLOGY

SYLLABUS

Fall, 2008

INSTRUCTORS:

Yuhong Fan, Ph.D. IBB Room 2313, 404-385-1312 yuhong.fan@biology.gatech.edu
Alfred Merrill, Ph.D. IBB Room 3309, 404 385-2842 al.merrill@biology.gatech.edu
Teaching assistant: Magdalena Medrzycki IBB Room 2228, mmedrzycki3@mail.gatech.edu

COURSE HOURS/LOCATION: MWF 10:05-10:55am/ Architecture (East) 123

OFFICE HOURS: No regular office hours are scheduled, but students are **STRONGLY ENCOURAGED** to meet with the instructors when needed by arranging a time via e-mail.

COURSE DESCRIPTION: Modern cell biology is a unifying discipline that combines genetics, biochemistry, and molecular biology with traditional morphological descriptions to study how cells function at the molecular level. This course will introduce students to the dynamic relationship between the structure of cellular organelles and the numerous biochemical reactions that are necessary for cell growth and survival with an emphasis on eukaryotic cells. The **FORMAT** of the course will consist of class lectures, which primarily draw on information found in the textbook, and for those taking the laboratory, exercises that illustrate some commonly-used research techniques and their application during a semester-long research project. In addition, students will be required to participate in analysis of assigned research articles, including a **GROUP ORAL PRESENTATION** or a **WRITTEN SYNOPSIS/ANALYSIS/CRITIQUE**. It is estimated that **1-2 hours** will be required outside of class to prepare for EACH lecture, and each research paper will require additional hours of study/preparation.

TEXTBOOK: Lodish H., Berk A., Kaiser, C.A., Krieger, M., Scott, M. P., Bretscher, A., Ploegh, H. and Matsudaira P., 2007. *Molecular Cell Biology, 6th Ed.* W.H Freeman and Company (ISBN-13: 978-0-7167-7601-7). Optional reading (available on loan from instructors): Gillen, C. M., 2007. *Reading Primary Literature*, Pearson/Benjamin Cummings Pub. (ISBN-13: 978-08053-4599-5), and research papers assigned in class.

Personal Response System (PRS): We will be using PRS (Clickers) for a portion of the course, if the room has this capability.

IMPORTANT GEORGIA TECH DATES

Mon	Aug 18	CLASSES BEGIN
Mon	Sep 1	OFFICIAL SCHOOL HOLIDAY
Fri	Oct 10	Last day to withdraw from individual courses with a grade of "W"
Sat-Tues	Oct 11- 14	Fall 2008 Student Recess
Thur-Fri	Nov 27-28	OFFICIAL SCHOOL HOLIDAY
Fri	Dec 5	LAST DAY OF CLASSES
Mon – Fri	12/8-12/12	FINALS WEEK

IMPORTANT COURSE DATES

FRI	Sep 5	EXAM 1
Mon	Sept 29	EXAM 2
Fri	Oct 24	EXAM 3
Fri	Nov 21	EXAM 4
WED	Dec 10	FINAL EXAM CUMULATIVE

BIOL 3340 SYLLABUS

Additional information:

All students are required to adhere to the Georgia Tech Academic Honor Code (www.honor.gatech.edu). This includes, but is not limited to, the following issues that pertain to the oral and written critiques, mnemonic tools, and exams for this class:

1. Plagiarism is not allowed. Plagiarizing is defined by Webster's as "to steal and pass off (the ideas or words of another) as one's own; use (another's production) without crediting the source."

In simpler terms: When you use any phrases, sentences, etc. verbatim from another source, they must be identified by quotation marks and citation of the source. In scientific writing, it is generally preferable to rephrase information from other sources and cite the source rather than use the same text, even when you offset the text with quotation marks. When you show diagrams, models and other materials that are not your own, the sources must also be identified.

These rules apply both to published information and information that you might receive from another student, website, previous class report, etc.

Plagiarization will be dealt with according to the GT Academic Honor Code.

2. Students are encouraged to collaborate in some aspects of the preparation of oral and written critiques, such as the early stages where you are achieving an understanding of the assigned papers; however, the final critiques must be written by each student alone.

For team oral presentations, students may collaborate in all aspects of the work, indeed, it is expected that all will contribute equally to the final product and that they will share the single grade that is awarded for the ppt presentation. Students may use copyrighted figures, etc. from publications in the ppt presentation if appropriate citations are given because the ppt will only be posted on access restricted WebCt website. However, if the team uses multiple copies of any copyrighted items (such as the pdf file of a copyrighted article), each student shown download their own copy from the Georgia Tech library website rather than for one student to distribute the pdf.

In the event the assigned paper has been used by a previous class, students are not allowed to use any of the ppt slides in whole or part that were prepared by the other class.

3. Unless specifically identified as group work; quizzes, tests, take-home-tests, homework, etc. are to be completed alone.

4. For Quizzes/Tests: Cheating off of another person's test or quiz is unethical and unacceptable. Cheating off of anyone else's work is a direct violation of the GT Academic Honor Code, and will be dealt with accordingly.

5. Because the exams for this course change every semester, students may use old tests as study tools.

For any questions involving these or any other Academic Honor Code issues, please consult the professors, teaching assistant, or www.honor.gatech.edu.

BIOL 3340 SYLLABUS

EVALUATION CRITERIA: *Exams: 80%*

There will be FOUR lecture exams and one FINAL EXAM (see exam schedule above); each exam is worth 20% of the final grade. **Your lowest LECTURE EXAM score will be dropped.** All lecture exams will be closed book and will consist of multiple-choice and short answer questions. **NO Makeup exams will be given so try to take all exams in case you miss one due to illness.**

NOTE: THE FINAL EXAM (20%) IS MANDATORY AND CANNOT BE DROPPED!

Student Presentations and Participation: 20%

The class will be divided into 8 groups (the first two will be the students taking the 12-3 pm lab, students taking the 3-6 pm lab). Students in each group have the option of preparing a group oral presentation/critique of the assigned research paper or individually to prepare a written critique. The oral presentation should be presented in PowerPoint, and must be timed to finish in 25 to 30 min to allow time for questions and discussion. The first page of the ppt file for the presentation should give the names of all of the students in the group and the statement that: "The preparers of this presentation agree that it can be posted on t-square for use by other students in the class only. None of the material may be reproduced or used for other purposes because it may be covered under copyrights from the original sources." The page with the students' names will be removed before the ppt file is posted on t-square. A single grade will be assigned for the entire group, so the group should prepare and rehearse it early (in the rare event that a member of a group is having difficulty with his/her portion of the presentation, and the others need to help). At the discretion of the instructor and in consultation with the oral presenters, the oral presentation may be conducted as a debate to ensure that all of the members of the group present orally as well as to increase class interest and participation.

For the students who decide to prepare a written report, they will prepare a 2 page analysis/critique of some aspect of the paper (for examples: Was one of the methods used incorrectly? Did the authors misinterpret the data in a figure or table? Did the authors overlook an important paper already in the literature that would have affected their conclusions?). These students are expected to provide documentation for their comments from the scientific literature (in a bibliography with 5-6 references from the peer-reviewed research literature) and will be expected to participate in the question and answer period for the oral presentation. Additional instructions about the critique will be provided in class.

Extra credit: these points will be added to the sum for the course (therefore, 5 extra credit points would be equivalent to adding 1 point to each exam and the paper critique)

A number of extra credit opportunities will be provided during the semester. Two that are already planned are: a) attendance at each oral presentation (documented by turning in an evaluation sheet for that presentation) will be awarded with 1 point (total, 8 points); and b) completion of the course evaluation at the end of the semester will also earn extra credit (2 points). If the classroom allows, additional extra credit will be awarded for participation in the use of PRS for in-class questions and answers.

USEFUL REFERENCES:

Online journals via the Georgia Tech library: <http://findit.library.gatech.edu/>

Link to literature search resource, NLM Gateway: <http://gateway.nlm.nih.gov/gw/Cmd>

Link to useful online cell biology resource: <http://www.cellbio.com>

US government web site for science: <http://science.gov/>

Link to the website for Lodish textbook: <http://bcs.whfreeman.com/lodish6e/default.asp>

CLASS CONTACTS: We suggest you obtain contact information from a few of your classmates in case you are absent from class and may obtain class notes and information from these contacts.

BIOL 3340 SYLLABUS**Syllabus for BIOL3340****Fall, 2008**

Class #	DAY	DATE	Chap	LECTURE TOPIC	Lecturer
1	MON	18-Aug	1 & 2	Introduction & Chemical Foundations	AM
2	WED	20-Aug	3	Protein Structure and Function	AM
3	FRI	22-Aug	4	Basic Molecular Genetic Mechanisms	YF
4	MON	25-Aug	4	Basic Molecular Genetic Mechanisms	YF
5	WED	27-Aug	5	Molecular Genetic Techniques and Genomics	YF
6	FRI	29-Aug	6	Genomics and Chromosomes	YF
	MON	1-Sep		OFFICIAL SCHOOL HOLIDAY	
7	WED	3-Sep		Tools used in analysis of research literature	YF
8	FRI	5-Sep		EXAM 1 (Chap. 1-6)	AM/YF
9	MON	8-Sep	7	Transcriptional Control of Gene Expression	YF
10	WED	10-Sep	7	Transcriptional Control of Gene Expression	YF
11	FRI	12-Sep	8	Post-transcriptional Gene Control	YF
12	MON	15-Sep		FIRST STUDENT PRESENTATION	YF
13	WED	17-Sep	9	Visualizing, fractionating and culturing cells	AM
14	FRI	19-Sep	10	Biomembrane Structure	AM
15	MON	22-Sep	11	Transmembrane transport of ions & small molecules	AM
16	WED	24-Sep		SECOND STUDENT PRESENTATION	AM
17	FRI	26-Sep	12	Cell Energetics	AM
18	MON	29-Sep		EXAM 2 (Chap. 7-12 & Student Presentations 1-2)	AM/YF
19	WED	1-Oct		THIRD STUDENT PRESENTATION	AM/YF
20	FRI	3-Oct	13	Moving Proteins into Membranes and Organelles	AM
21	MON	6-Oct	14	Vesicular Traffic, Secretion, and Endocytosis	AM
22	WED	8-Oct	14	Vesicular Traffic, Secretion, and Endocytosis	AM
23	FRI	10-Oct		FOURTHSTUDENT PRESENTATION	YF
		10-Oct		Last day to drop individual courses(s) with a grade of "W"	
24	MON	13-Oct		OFFICIAL SCHOOL HOLIDAY	
25	WED	15-Oct	15	Signaling I	AM
26	FRI	17-Oct	15,16	Signaling II	AM
27	MON	20-Oct	16	FIFTH STUDENT PRESENTATION	YF
28	WED	22-Oct	16	Signaling II	AM
29	FRI	24-Oct		EXAM 3 (Chap. 13-16 & Student Presentation 3-5)	AM/YF
30	MON	27-Oct	17	Microfilaments and Intermediate Filaments	AM
31	WED	29-Oct	17,18	Microfilaments, IF & Microtubules	AM
32	FRI	31-Oct	18	Cytoskeleton II: Microtubules	AM
33	MON	3-Nov	19	Integrating Cells into Tissues	AM
34	WED	5-Nov	19	Integrating Cells into Tissues	AM
35	FRI	7-Nov		SIXTH STUDENT PRESENTATION	JL
36	MON	10-Nov	20	Regulating the Eukaryotic Cell Cycle	YF
37	WED	12-Nov	20	Regulating the Eukaryotic Cell Cycle	YF
38	FRI	14-Nov		SEVENTH STUDENT PRESENTATION	YF
39	MON	17-Nov	21	Cell Birth, Lineage, and Death	YF
40	WED	19-Nov	21	Cell Birth, Lineage, and Death	YF
41	FRI	21-Nov		EXAM 4 (Chap. 17-21 & Student Presentations 6 & 7)	AM/YF
42	MON	24-Nov		EIGHTH STUDENT PRESENTATION	YF
43	WED	26-Nov	22	Molecular biology of development	YF
44	FRI	28-Nov		OFFICIAL SCHOOL HOLIDAY	
	MON	1-Dec	23,24	Other complex cells: Nerve cells & the immune system	YF
	WED	3-Dec	25	Cancer	AM
	FRI	5-Dec		Course Wrap-up	AM/YF
	WED	10-Dec		FINAL EXAM (2:50 - 5:40 pm)	AM/YF
				50%: Chap. 22-25 & Student Presentation 8	
				50%: Questions from the rest of the semester	