

Contemporary Biology 3255 (Critical Thinking in Biology)

All classes will be held in Room 233 BioLife Bldg.
11 AM to 12:20 PM Tuesdays and Thursdays

Instructor: Mark Feitelson, Ph.D.

Room 409, BioLife Science Bldg.

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Office hours by appointment

Upper division undergraduate course for students with a solid biology and chemistry background (prerequisites: Biol 1111 and 2112; inorganic and organic chemistry).

3 credits.

Limit the class to 21 students per section, and if more students sign up, additional sections may be taught.

Two 80 minute sessions per week (Tuesdays and Thursdays) will have a discussion based format. Grading will be based on student homework assignments (45% of grade: 21 homework assignments x 5 questions/homework x 3 points/question = 315 points) and presentations (45% of grade: 315 points per presentation). Each student will be responsible for 1 presentation and leading a discussion. Oral participation in class will be valued at a total of 10% of the class grade (60 points value). Alternatively, 10% of the class grade could be earned by presenting a unique paper at the end of the class (last 2 sessions). The instructor will act as a moderator for all oral presentations. Total points for the class will be 690.

Summary: The course is designed to introduce students to elements of critical thinking in biology. This includes (1) introductory lectures that outline the elements and criteria that compose critical thinking. (2) The instructor will then present additional introductory lectures and go over a paper demonstrating how critical thinking works. (3) The instructor will provide papers (reviews, perspective pieces and original work) to all students two weeks before an assigned discussion on a particular topic is to take place. It is required that each student read the papers and be prepared to discuss them during class. Homework assignments associated with each discussion topic will be due at the start of each class period. Please bring a hard copy of your completed homework assignment each class period for this purpose. (4) Each class meeting there will be a different discussion leader critically evaluating a paper on a particular topic. Discussion leaders are free to choose any format for presentation (verbal, powerpoint, handouts, etc.. or some combination) to span the first 15-25 minutes of the period. Discussion leaders will be assigned topics and papers in alphabetical order according to the first letter of their last name. When students are not presenting, they must attend and participate in the discussion of papers presented by other students. Attendance will be taken at each class meeting. It is strongly advised that students go to outside sources for further reading on their subject content and on examples of critical thinking and comment on them as part of their participation in class, as discussion leader, and on homework assignments.

The **goals** of the course are to help students understand what they are reading and presenting, and to deepen their understanding of materials presented through discussion and by formulating questions. Students will also learn how to think inductively and deductively in formulating hypotheses/questions from the material presented, designing experimental approaches with

controls, and considering the ramifications of both positive and negative results of questions. This is critical in building a way of thinking that will help students to achieve a perspective in biology from which they could build in the future.

As your instructor, I will do my best to steer the discussions into paths of further understanding and inquiry. If there are concerns you have about the way materials are being presented, or do not understand concepts being presented, or have comments about presentation format or content, please email me, and I will endeavor to make things clearer. Alternatively, we could discuss matters by appointment or over the phone. Please do not be shy: this is your education and your future. Care enough to meet me half way and I will try to do the same. Please do not wait until the end of the semester to voice your concerns.

Blackboard: All course announcements, syllabus, homework assignment template, and grades will be posted online using Bb. Updates to the syllabus will be posted; if necessary, so please check periodically. If you have not used Bb previously, ask a fellow student to spend a few minutes helping you after the first class meeting. If you do not use your Temple email account, you need to activate it. If you have forgotten your password, you need to go to Computing Services and have them assign you a new password.

Letter grades will not be assigned until the end of the semester but you may expect that the letter grade will correspond, **roughly**, to a percentage scale with 93-100% points = A, 90-93% = A-, 87-90% = B+, 83-87 = B, 80-82 = B- and so on. All of your points will be posted on Bb so you can keep a running tab of your class average. Grades will be awarded based upon the achievement of each student [(no. of points awarded/no. of points attempted) x 100]. THERE IS NO CURVE.

The last few class meetings will involve make-up days for students who were sick, away, or if you did not do well as discussion leader earlier in the semester. In the latter event, new topics will be assigned. It is expected that all students will participate in these sessions. If for some reason you miss a class, please email your homework to Dr. Feitelson the night before the discussion on the topic you will miss.

Grades will be determined as follows:

Papers for discussion will be posted on Bb. Student homework assignments will be submitted as a hard copy when class convenes to discuss the corresponding topic. If this cannot be done, then homework assignments will be emailed to Dr. Feitelson (feitelso@temple.edu) by 10 PM the night before the corresponding discussion. An extra copy of your homework should be brought to the discussion group the following day so as to share your questions and inquiries with the rest of the group in class. No credit will be given for copy-paste off of other people's homework assignments. This is considered academic dishonesty.

There is a zero tolerance policy towards academic dishonesty. The first time it occurs, a form "Charge of academic dishonesty" may be filed by the instructor and become part of your permanent record at the university. This could result in failure on the assignment or in the course, depending upon the nature and extent of the violation. A second occurrence could result in dismissal from the university. This means you should not copy other people's questions or answers for your homework assignments.

Students will be evaluated based on:

- Clarifying issues in the assigned topic
- Comparing and contrasting

- Developing a perspective
- Drawing conclusions
- Evaluating information
- Extrapolating data/information
- Generating and assessing solutions
- Making a hypothesis
- Making predictions and interpretations
- Making value judgments
- Observing and inferring
- Recognizing cause and effect
- Recognizing logical thought
- Summarizing
- Recognizing contradictions

for all homework assignments, discussion in class, and presentation of papers as a discussion leader.

Honesty and Civility: You must abide by Temple's Code of Conduct (see <http://www.temple.edu/assistance/udc/coc.htm>), which prohibits:

1. Academic dishonesty and impropriety, including plagiarism and academic cheating. The Temple Honor code provides disciplinary action for cheating which may include expulsion from the University.
2. Interfering or attempting to interfere with or disrupting the conduct of classes or any other normal or regular activities of the University.

Please do not disrupt presentations with irrelevant conversation. Everyone who registers for this class is an adult. You are legally able to marry without parental consent, buy a home, pay taxes, vote, and work, budget your money, defend your country in military service, etc. You should also be adult enough not to disturb others. Mindless chatter during class is distracting to other students and to the instructor. Please ask questions or make comments if you didn't hear or follow something. It helps the discussion leader and instructor set a pace that is appropriate for students who are listening and want to participate.

Avoid entering class late. If you are late, enter as quietly as possible.

Attendance: Attending EVERY class is mandatory, enhances your undergraduate experience and gives you the most value for your tuition dollar. If you miss class due to illness, death in the family or other emergency, sports competitions, and/or religious holidays, there are make-up sessions the last few class meetings. These last class meetings may also be used for students who want to make a second presentation in the event that they scored poorly on their first presentation. Any absences beyond 4 class sessions will not receive credit for the class and will be given an F.

Disabilities: Any student who needs accommodation because of a disability should contact the instructor privately to discuss the specific situation as soon as possible. The Office of Disability Resources and Services (215-204-1280) in Ritter Annex 100 will coordinate reasonable accommodations for students with documented disabilities. We will do our best to be accommodating.

Syllabus: Critical Thinking in Biology (BL3380) for the Fall, 2017

1. Tues, Aug. 29. **Dr. Feitelson.** Introduction to critical thinking.
2. Thurs, Aug. 31. **Dr. Feitelson.** Inductive and deductive thinking.
3. Tues, Sept. 5. **Dr. Feitelson.** Overview of Immunology
4. Thurs. Sept. 7. **Dr. Feitelson** Discussion on [Pathogenic Mechanisms in HBV and HCV-associated HCC](#) led by Article provided in advance; class participation expected.
5. Tues. Sept. 12. **Dr. Feitelson.** Discussion on [Pathogenic Mechanisms in HBV and HCV-associated HCC](#) led by Article provided in advance; class participation expected.
First homework assignment due at the beginning of class.
6. Thurs. Sept. 14. [HBV pathogenesis.](#)
7. Tues, Sept. 19. [Immunology in the liver.](#)

Thurs, Sept. 21. NO CLASS
8. Tues, Sept. 26. [The microbiome and cancer.](#)
9. Thurs, Sept. 28. [Epigenetics of cancer.](#)
10. Tues, Oct. 3. [Stem cell mutations and cancer.](#)
11. Thurs, Oct 5. [Epithelial-mesenchymal transition.](#)
12. Tues, Oct. 10. [Human papillomaviruses.](#)
13. Thurs, Oct. 12. [Cancer Vaccines.](#)
14. Tues, Oct. 17. [GMOs.](#)
15. Thurs, Oct. 19. [Synonymous mutations in disease.](#)
16. Tues, Oct. 24. [Virus immunopathology.](#)
17. Thurs, Oct. 26. [Epstein-Barr virus pathogenesis.](#)
18. Tues, Oct. 31. [Zika virus biology.](#)
19. Thurs, Nov. 2. [Targeting cancer stem cells.](#)
20. Tues, Nov. 7. [Organelle and nuclear communication.](#)
21. Thurs, Nov. 9. [Multi-drug resistance.](#)
22. Tues, Nov 14. [Aerobic glycolysis.](#)

23. Thurs, Nov. 16. [Metagenomics and the microbiome](#)
Tues and Thurs, Nov. 21 and 23: Fall break and Thanksgiving
24. Tues, Nov. 28. [Characteristics of the cancer genome.](#)
25. Thurs, Nov. 30. [New antibiotics.](#)
26. Tues, Dec. 5. [TBA](#)
27. Thurs, Dec. 7. [TBA](#)

End.