

CHEM 203: CHEMISTRY IN LIFE: AIDS DRUG DISCOVERY AND DEVELOPMENT

Units: 4

Semester: Fall 2016

Days:

Lecture: Tues & Thurs 11:00 am - 11:50 am

Laboratory: One of the following: Tues 2:00 pm - 3:50 pm; Tues 4:00 pm - 5:50 pm; Wed 10:00 am - 11:50 am; Wed 12:00 pm - 1:50 pm; Wed 2:00 pm - 3:50 pm; Wed 4:00 pm - 5:50 pm; Thurs 2:00 pm - 3:50 pm; Thurs 4:00 pm - 5:50 pm; Fri 10:00 am - 11:50 am; Fri 12:00 pm - 1:50 pm; Fri 2:00 pm - 3:50 pm

Location:

Lecture: SGM 123

Laboratory: SGM 307

Instructors:

Lecture:

Matthew Pratt

Office: LJS 250

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Email: matthew.pratt@usc.edu

Office Hours: 1 - 2 pm, M; 10 - 11 am, Th

Lecture:

Peter Qin

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Office Hours: **TBD**

Website:

Dr. Bruno Herreros

Office: SGM 426

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Office Hours: By Appointment

Computer Lab:

Jaime Avila

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Teaching Assistants:

Nick Marotta

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Tuesdays 2:00-3:50 pm & 4:00-5:50 pm

Marlon Duro

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Wednesdays 10:00-11:50 am & 12:00-1:50 pm

Polina Nesterova

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Wednesdays 2:00-3:50 pm & 4:00-5:50 pm

Yingsheng Zhou

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Thursdays 2:00-3:50 pm & 4:00-5:50 pm

Jinglei Lyu

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Fridays 10:00-11:50 am & 12:00-1:50 pm

Course Description:

CHEM 203: Chemistry in Life: AIDS Drug Discovery and Development (<http://c203.usc.edu/203/>) is designed for non-science majors, and meets the Learning Objectives for a General Education - Category D class. This Chemistry course will provide students with a solid understanding of HIV/AIDS and the discovery and development of drugs used to treat HIV/AIDS. As such, you will be trained in the basic science concepts and the scientific method and learn how science and technology can impact society and health. The course will be taught in a “bottom-up” fashion, starting with basic chemical and biological principals. This component of the course will start with understanding the structure and bonding of organic molecules, including drugs. We will then move on to learn basic molecular and cellular biology, giving us the tools to then explore our immune systems and how we fight disease. The next component of the course will focus on the effects of HIV, ranging in scale from our bodies to the global pandemic. Specifically, we will look at the history and epidemiology of HIV and AIDS, followed by an investigation of the molecular mechanisms of HIV infection. We will then move on to discuss how from the moment of infection our immune system is in constant losing battle with HIV and how drugs have both entered and exited the fray. In the next component, we will continue with a discussion of HIV drug development, which covers topics such as how your body processes drugs and how we can statistically analyze the efficacy of drugs. Lastly, we will finish the course by looking at the future of AIDS pandemic and ethical questions raised by treatment and prevention.

CHEM 203 will give you an understanding of why chemistry and biochemistry are important in the context of drug development and treating disease. You will gain an understanding of how pharmaceutical companies develop drugs and what factors go into whether they make it to market or not. You will gain an understanding of what HIV/AIDS is, how it is treated, and what its socioeconomic effects are. Upon completing this course, you will have substantive knowledge in science and technology. You will also understand how scientists investigate scientific questions and solve important challenges in human health. Additionally, you will be able to articulate basic principals in chemistry, biology and human disease a well-informed, cogent manner.

Learning Objectives:

Students will be asked to demonstrate comprehension of basic concepts in chemistry, biochemistry, and molecular and cell biology that are pertinent to the overall theme of the course. Students will be expected to take basic concepts presented to them in lecture and apply that knowledge to similar but different situations on exams. They will solve problems requiring the development of skills in such specific areas as statistics, enzyme inhibition kinetics, computer modeling and data analysis, and information gathering.

Prerequisite(s): None

Co-Requisite(s): None

Concurrent Enrollment: None

Recommended Preparation: High School Chemistry and Biology

Course Notes

Class Materials (slides, recorded lectures, laboratories, reading material, etc.) will all be available through a the class website <http://c203.usc.edu/203/>.

Required Readings and Supplementary Materials

None

Assignments and Exams

Grades will be calculated based on exams, laboratory assignments, homework, a quiz and class participation.

Exams: There are four lecture-based hour exams scheduled at 11:00 am and a final exam at 8:00 am on the following days:

Exam	Date	Topics Covered	Location
#1	Sept. 15th	Lectures 2 - 7	SGM 123
#2	Oct. 12th	Lectures 8 - 14	SGM 123
#3	Nov 3rd	Lectures 16 - 19	SGM 123
#4	Dec 1st	Lectures 19 - 23	SGM 123

see <http://classes.usc.edu/term-20153/finals/> for USC final exam schedule

The lowest score from the five exams will be dropped and will not count towards the final grade.

Attending Exams: All four midterm exams begin at 11:00 am and students will be allowed to enter and take the exam until 11:30 am. **After 11:30 am, students will be turned away from the examination.** Likewise students in the exam will not be permitted to leave the exam room until 11:30 am.

The final exam begins at 9:00 am and students will be allowed to enter and take the exam until 9:30 am. **After 9:30 am, students will be turned away from the examination.** Likewise, students in the exam will not be permitted to leave the exam room until 9:30 am.

Make-up Exams: No make-up exams will be given. An unexcused missed hour exam will be considered the one allowed dropped exam. A second unexcused missed hour exam will be counted as a zero. An excused absence from an exam will also be considered the one allowed dropped exam. An excused absence from a second exam will be granted by the instructor only on the basis of proper documentation. For example, a second missed exam because of serious medical reasons will be excused only if a certification is provided by a physician.

Laboratory: There are nine laboratory assignments (see <http://c203.usc.edu/203/> for schedule) worth 20 points each. Late assignments will have 25% of the total possible points deducted if up to one week late, thereafter it will not be accepted (zero points). Lab assignments are digitally checked for plagiarism, and lab assignments reproduced from another student will not be accepted (zero points) and either could lead to additional sanctions under University rules and guidelines. Labs will be graded within one week of submission. The laboratory is completely internet browser based. Since this is the case, laboratory attendance is not required, but it is highly recommended in SGM 307. During the laboratory period, the TA will help students complete the assignment. However, the TA will not do the assignment for you or directly answer assignment questions. They will help you figure out the assignment on your own. **All labs are in your own words.**

Homework: A Homework Assignment and one Web Quiz will be assigned and completed via the website.

Make-up Assignments: An excused absence from a second exam or assignment will be granted by the instructor only on the basis of proper documentation. For example, a second missed exam because of serious medical reasons will be excused only if a certification is provided by a physician.

Contesting Grades: Mistakes can be made during the grading process, and students will have the opportunity to contest grades; however, there is an explicit policy for doing so. A grade on an individual Exam, Laboratory, or Assignment may be contested for two weeks after the due date or examination date. All contests should be sent through your TA. This may take the form of an email or visit to office hours. For example, if a laboratory is due on Tues Sept. 8th, the grade must be contested by Tues Sept. 22nd. After this two week period, the assigned grade will stand as is. *There will be no exceptions to this rule.*

Grading Breakdown

There will be four midterm exams (100 points each, 3 out of 4 graded), a final exam (100 points), laboratories (180 points each), a homework assignment (25 points), a web quiz (40 points), and participation in class evaluations (10 points).

Exams	300 points
Final Exam	100 points
Laboratories	180 points
Homework	25 points
Web quiz	40 points
<u>Participation</u>	<u>10 points</u>
Total	655 points

To receive a passing grade, satisfactory work must be done in both the lab and the lecture portions of the course. Points shown above are required work.

Your final grade for this course MAY be upgraded (never downgraded) on a gentle adjustment of the straight scale. Therefore, you will not be able to calculate your grade simply based on your point total divided by the total number of points in the course. Grades will only be assigned after all points have been totaled.

Academic Conduct

Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Section 11, *Behavior Violating University Standards*: <https://scampus.usc.edu/1100-behavior-violating-university-standards-and-appropriate-sanctions/>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct: <http://policy.usc.edu/scientific-misconduct/>.

Discrimination, sexual assault, and harassment are not tolerated by the university. You are encouraged to report any incidents to the *Office of Equity and Diversity*: <http://equity.usc.edu/> or to the *Department of Public Safety*: <http://capsnet.usc.edu/department/department-public-safety/online-forms/contact-us>. This is important for the safety whole USC community. Another member of the university community – such as a friend, classmate, advisor, or faculty member – can help initiate the report, or can initiate the report on behalf of another person. *The Center for Women and Men*: <http://www.usc.edu/student-affairs/cwm/> provides 24/7 confidential support, and the sexual assault resource center webpage sarc@usc.edu describes reporting options and other resources.

Support Systems

A number of USC’s schools provide support for students who need help with scholarly writing. Check with your advisor or program staff to find out more. Students whose primary language is not English should check with the *American Language Institute*: <http://dornsife.usc.edu/ali>, which sponsors courses and workshops specifically for international graduate students. *The Office of Disability Services and Programs*: http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html provides certification for students with disabilities and helps arrange the relevant accommodations. If an officially declared emergency makes travel to campus infeasible, *USC Emergency Information*: <http://emergency.usc.edu/> will provide safety and other updates, including ways in which instruction will be continued by means of blackboard, teleconferencing, and other technology.