

Syllabus

Chemical Biology (CHEM 583) - Spring 2012

Lecture: Tuesday and Thursday, 9:25-10.40 am, 300 School of Sciences & Mathematics Building

Instructor: Dr. Marcello Forconi
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Office Hours: Tuesday, 10:50-12:00 pm

Course's website: This syllabus and papers needed for the course will be available on OAKS.

Textbook: There is no textbook for this course.
Papers from the literature will be provided through the course's website. Lectures will be based on the discussion of the assigned papers; therefore, **it is required that you read the assigned paper(s) before the lecture.**

Prerequisite: CHEM 351

Course Objectives:

- To explain how chemical tools can be used to study the properties of biological macromolecules
- To evaluate the logic behind specific experiments reported in scientific papers
- To discriminate between data and interpretations in science

(Tentative) Course Sequence for CHEM 583 – Spring 2012

	Date	Topic	Papers
Chemical tools in enzymology	1/10	Introduction to Chemical Biology	
	1/12, 17	Specificity in DNA polymerase and the role of induced fit	Tsai Biochem 2006
	1/ 19, 24	Group I ribozyme: kinetics and mechanisms	Karbstein Biochem 2002
	1/26, 31	RNA modifications and applications to catalysis	Das NSB 2005 Forconi Angew Chem 2010
	2/2, 7	Unnatural amino acids	TBA
	2/9	TEST # 1	
Beyond common reactions and substrates	2/14, 16	Halogenases and cryptic halogenases	Zhu JACS 2007 Villancourt Nature 2005
	2/21	Catalytic promiscuity	Aharoni Nature Genet 2005
	2/23	NO CLASS	
	2/28	In search of alternative macromolecules	Wolfe-Simon Science 2011 Tawfik Biochem 2010
		3/1	TEST # 2
	3/6, 8	Spring Break	
Applied chemical biology	3/13, 15	Profiling protein thiol oxidation	Seo PNAS 2009
	3/20, 22	Specificity in signal transduction systems	Kung PNAS 2005 Skerker Cell 2008
	3/27, 29	Glycobiology	TBA
	4/3	TEST # 3	
New frontiers in chemical biology	4/5, 10	Dynamics in macromolecules	Boehr Science 2006
	4/12	De-novo computational design of enzymes	Jiang Science 2008 Lassila PNAS 2010
	4/17	Paleobiochemistry	Thomson Nat Genet 2005 Ortlund Science 2007
	4/19	Genome manipulation and the creation of 'digital life'	Cello Science 2002 Gibson et al Science 2010
	5/1	FINAL EXAM, 8 -11 am	

Remember, except for the final exam, this is not the final schedule. Please refer to announcements during the lectures for the exact dates of the tests.

Tests: There will be three tests. These tests may involve questions on the material analyzed in the class, questions on new material, or discussion of class-related material.

Homework: There will be two homework assignments. Due dates for the assignments will be discussed in the course.

Final Exam: May 1st, 8-11 am.

Withdraw Date: March 14th

Grading:

- Each test, 15 %
- Each homework, 10 %
- Final exam, 35 %

Letter	points
A	925-1000
A-	900-920
B+	870-895
B	830-865
B-	800-825
C+	770-795
C	730-765
C-	700-725
D+	670-695
D	630-665
D-	600-625
F	Below 600

Attendance: Attendance at lectures is usually proportional to your grade.

The exact date of the tests will be announced in advance; the schedule above is **not** definitive. Attendance at exams is mandatory; however, in extreme instances (such as major medical problems or sudden family situations) there can be make-up exams. Please talk to me should such instances arise. Generally, no more than one justified absence will be tolerated.

Academic Dishonesty: Cheating and dishonesty will not be tolerated. Please refer the Student Handbook for the specific definitions. Classroom disruption will also not be tolerated. Serious and persistent classroom disruption could result in disciplinary charges, as explained in the Student Handbook.

Disabilities: If there is a student in this class who has a documented disability and has been approved to receive accommodations through SNAP Services, please feel free to come and discuss this with me during my office hours.

Other possible issues: Please talk to me if you need to discuss a change in an exam time and/or date because of your religious observances. Similarly, please talk to me if you are involved in a sport team and you have a scheduled event on one of the exam dates.