Syllabus
Chemical Biology (CHEM 581) - Spring 2011

Lecture: **Tuesday and Thursday, 9:25-10.40 pm, 125 New Science Building**

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

Course's website: This syllabus and papers needed for the course will be available at the EReserve page for this course (go to http://ereserve.cofc.edu/eres/ and then search for CHEM581).

Textbook: There is no textbook for this course.
Papers from the literature will be provided through the course's website.

Suggested additional book for enzyme kinetics:

Should you decide to investigate this topic more deeply, there are two almost equivalent books by Alan Fersht: "*Structure and mechanism in protein science: a guide to enzyme catalysis and protein folding"* and *"Enzyme structure and mechanism"*. These books are available from the Addlestone library.

Prerequisite: CHEM 351

Course Objectives:

- To understand how chemical modification can be used to study the properties of biological macromolecules.
- To learn how to read and evaluate a scientific paper

(Tentative) Course Sequence for CHEM 583 – Spring 2011

Date	Topic	Papers
01/11	**Introduction to Chemical Biology**	
01/13 & 18	**DNA polymerases: fast and slow**	1. Zhuang PNAS 2008 2. Tsai Biochem 2006
01/20 & 25	**Group I ribozyme: kinetics and mechanisms**	3. Karbstein Biochem 2002 4. Narlikar PNAS 1995
01/27 & 02/01	**RNA modifications and applications to catalysis**	5. Das NSB 2005 6. Forconi Biochem 2008
02/03 & 08	**Unnatural amino acids**	7. Valiyaveetil Science 2006 8. Ohuchi Curr Opin Chem Biol 2007
02/10	**TEST**	
02/15 & 17	**Halogenases and cryptic halogenases**	9. Zhu JACS 2007 10 . Villancourt Nature 2005
02/22 & 24	**Catalytic promiscuity**	11. Tawfik Biochem 2010 12. Wolfe-Simon Science 2011
03/01 & 03	**In-vitro evolution**	13. Schultes Science 2000 14. Aharoni Nat Genetics 2005
03/08 & 10	**Spring Break**	
03/15 & 17	**Resurrection of ancient enzymes**	15. Thomson Nat Genet 2005 16. Ortlund Science 2007
03/22	**Test**	
03/24 & 29	**Protein & RNA folding problems**	Dill NSB 1997 Solomatin Nature 2010
03/31 & 04/05	**Dynamics in macromolecules**	Boehr Science 2006 Watt PNAS 2007
04/ 07	**Specificity in signal transduction systems**	Kung PNAS 2005 Skerker Cell 2008
04/12	**Profiling protein thiol oxidation**	Seo PNAS 2009
04/14	**Suspended animation**	Blackstone Science 2005 Collman PNAS 2009
04/19 & 21	**Genome manipulation and the creation of 'digital life'**	Cello Science 2002 Gibson et al Science 2010

04/28 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 two tests. These tests will involve a student presentation of a paper not discussed in the class, but related to the course and its topics.

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

Final Exam: **April 28th, 8-11 pm.**

Withdraw Date: **March 14th**

Grading:

- **Test 1** **15%**
- **Homework 1** **15%**
- **Test 2** **15%**
- **Homework 2** **15%**
- **Final Exam** **40%**

For a total of 1000 points

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 though 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.