

# BIOM/ECE 533 Biomolecular Tools for Engineers

## Spring 2014 Syllabus

The instructor reserves the right to update and change the syllabus as the term and class progresses.

**Course Objectives:** The objective of this course is to provide engineering students with the opportunity to learn cutting-edge skills in the application of biomolecular tools to biomedical engineering and related engineering disciplines. By the end of this course, students should be able to carry out and understand basic qualitative and quantitative biomolecular analyses, including **DNA extraction, gel electrophoresis, PCR, cloning, protein purification, and sequencing**. This course covers molecular application for diagnostic purposes in the clinical laboratory, including microbiology, virology and genetics.

**Prerequisites:** MIP 300 or BMS 300

**Meeting Times:** Wednesday: Lecture and Discussion, 3:00 - 4:40 PM, Scott Bioengineering 231  
Friday: Lab, 12:00 - 2:50 AM, Yates 314

**Course website:** <https://ramct.colostate.edu/>

**Instructor:** Diego Krapf

[krapf@engr.colostate.edu](mailto:krapf@engr.colostate.edu) (this is the fastest way to contact me)

<http://www.engr.colostate.edu/~krapf/biophysics/>

Office phone: 491-4255

Scott Bioengineering 318

**Office Hours:** Contact me by email to schedule office hours.

**TA:** Bryce Schroder

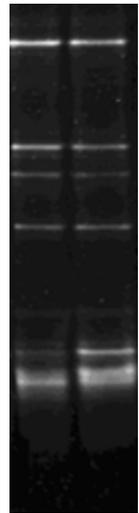
[bschroder1@hotmail.com](mailto:bschroder1@hotmail.com)

**Required Text:** Molecular Diagnostics: Fundamental, Methods and Clinical Applications. L.Buckingham and M.L.Flaws, F.A.Davis 2007

**Other recommended:** 1) Molecular Diagnostics for the Clinical Laboratory. Coleman and Tsongalis, Humana Press 2006 (you can use this book instead of the textbook) 2) Introduction to Biotechnology 2nd Ed., W.J.Thieman and M.A.Palladino, Pearson 2009. 3) Lodish et al., Molecular Cell Biology 6/e, chapters 4-5 (If you do not already own a molecular cell biology book, I strongly encourage you to buy either Lodish et al. or Alberts et al.)

Students are required to purchase a lab notebook, lab coat, and goggles. Lab protocols will be provided and readings will be assigned.

**Course Format:** **Wednesdays** will be dedicated to lectures and student presentations of readings and class discussion. Each student will be assigned one article to read and present to the class during the semester. All students are expected to read the articles prior to the class period and to prepare at least three thoughtful questions for discussion. **Fridays** provide the opportunity to learn the methods “hands-on.” Students will be paired up into teams of two and will choose a sample to work on for the semester. Students should be familiar with the protocols before the lab meeting time (there will be weekly quizzes). All students must keep a detailed lab notebook recording what is done in the lab.



**Evaluation:** There will be lab quizzes, a mid-term exam, a final exam, and lab reports. Class presentations and overall participation (more than “showing up”) will also comprise a significant portion of the final grade.

**Grading:**

	<b>Percent Total Grade:</b>
Class Discussion/Participation:	10%
Class Presentation:	20%
Lab Quizzes (~10):	15%
Lab Reports:	25%
Mid-term exam:	15%
Final Exam:	15%
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	100%

- A+ = 98-100
- A = 94-97
- A- = 90-93
- B+ = 87-89
- B = 84-86
- B- = 80-83
- C+ = 76-79
- C = 65-75
- D = 50-64
- F = 0-49

The University is required to provide reasonable accommodations to students with disabilities, so as not to discriminate on the basis of that disability. Students with disabilities are encouraged to contact the instructors to discuss their individual needs for accommodations. Also, you may visit Resources for Disabled Students: <http://rds.colostate.edu/> or call them at (970) 491-6385.

The course will adhere to the Academic Integrity Policy of the CSU General Catalog (page 7, <http://www.catalog.colostate.edu/FrontPDF/1.6POLICIES1112f.pdf>) and the Student Conduct Code (<http://www.conflictresolution.colostate.edu/conduct-code>)