

Math Clinic – Syllabus (Tentative)

MATH 4/5779, Section 002, Fall 2009

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Course Website: <http://math.ucdenver.edu/~billups/courses/clinicF09/>

Office hours: TBD, or by appointment

Class Hours: MW 2:30-3:45 pm, Room TBD

Prerequisites: Permission of the Instructor

Textbook: None.

Catalog Description: The clinic is intended to illustrate the applicability and utility of mathematical concepts. Research problems investigated originate from a variety of sources—industry, government agencies, educational institutions, or nonprofit organizations

Overview The Mathematics Clinic is a 3-credit course intended to give students practical experience applying mathematics to solve real-world problems. The clinic is conducted as a research team, with the students and faculty working together to address a problem of interest to a sponsoring corporation or government agency. Students should have a strong mathematical background, but need not be mathematics majors.

Course Objectives:

- Gain experience applying mathematics to real-world problems.
- Improve oral and written communication skills.
- Develop teamwork and project management skills.
- Gain experience in interdisciplinary collaboration.
- Produce a high quality piece of work that will help enhance your marketability to prospective employers.

Course Conduct: The course will be run as much as possible like a real-world project. Don't expect many lectures. Most of our class time will be spent working on the project. Because each project is different, it is impossible to anticipate exactly what you will be doing, but here is a broad outline of how I expect the course to run:

1. Project Definition (2-3 weeks). During this phase, we will be learning about the problem, brainstorming ideas, exploring the literature, and defining goals for the semester. Typical assignments in this phase include literature review, developing an annotated bibliography, and giving a short presentation to the class about a topic of relevance.
2. Project Planning (1-2 weeks). In this phase, we will break down the goals into well-defined tasks, assign people to project teams to perform these tasks, develop a project schedule, and create an outline for our final report. Typical assignments in this phase include writing a project plan, more reading, and presentations to the class.
3. Project Execution (7-10 weeks). Here, you will work on your assigned tasks (usually in teams) to achieve the project goals. A major component of this will be writing your parts of the project report. You might also be developing mathematical models and/or computer software. During this phase, you will be expected to submit a bi-weekly status report. These reports will be assembled and submitted to our sponsor.
4. Final Reporting and Close-out (3 weeks). During this phase, we will assemble and edit the final report, wrap up loose ends, edit the report, compare project goals to achievements, edit the report some more, develop and give a final presentation for our sponsor, edit the report, and celebrate!

Grading: Your grade will reflect how well you meet your responsibilities and your overall contribution to the success of the project. There are several aspects of your performance that are particularly important in this course:

- Prepared attendance is expected, so each student can participate actively in the discussions. Unlike conventional courses, the whole class depends upon each student's contribution.
- Timeliness is crucial, as we must produce our final report on time. All assignments are milestones, scheduled to fit this overall deadline. Accordingly, late assignments will be assessed substantial penalties. If you are experiencing difficulties that might cause you to miss a deadline, talk to me as soon as possible. We may be able to adjust the deadline by making modifications to the project plan.
- Communication skills (both oral and written) are an important part of your evaluation. One of the educational goals of the clinic is that you improve these skills, and this is reflected in your assignments.
- Initiative. Unlike usual courses, you cannot be successful just by "doing what you're told". I will try my best to make sure everyone has meaningful and manageable assignments that will contribute to the overall project; but it is ultimately your responsibility to you to find your niche. You need to think be proactive, by thinking up ideas, volunteering for tasks, and assuming a leadership role. If you think your work load is too light or your assignments are irrelevant or not meaningful, come talk to me so we can get you back on track.
- Teamwork. We're all in this together. At times, it can be very frustrating working together. But it is critical that you work hard to make your team successful.

Due to the dynamic nature of the project, it is impossible to predict all of your assignments, but typically, grading will be based according to the following weights:

Oral Presentation(s)	5 pts each
Individual writing assignments	10 pts each
Status reports	5 pts (total)
Team Project Proposal	5 pts
Team Project Report	50 pts
Team Project Presentation	30 pts
Individual contributions/citizenship	50 pts

Assignments:

Oral Presentations : Each of you will give at least two (and perhaps more) oral presentations throughout the semester. These will involve either presenting an assigned topic to the class (which you will need to research), or presenting status reports for your group. Oral presentations will be critiqued by the instructor and by your classmates.

Individual writing assignments : For the introduction and background sections of our final report, each of you will be given at least one writing assignment. Typically, this will involve doing a literature review on background information relevant to our project, writing a summary of this material, and preparing an annotated bibliography of any references you used. Writing assignments must be done using LaTeX.

Project Proposal: This is a formal document, written in LaTeX, that defines your team and describes what you propose to do for your project. There are two parts: technical description, and project management. Both are essential.

The technical description describes in as much detail as possible what issues you plan to address and what avenues you intend to explore in addressing those issues. This section should include references to relevant literature and should include a proposed outline for your contribution to the final report.

The management description describes how your team will function, how often it will meet, and who will be responsible for each part of the project. It should also include milestones and dates for key parts of your project.

Team Project Report • **Draft Report:** Several weeks before the end of the semester, each team will submit a draft report. This should be as close to a final report as possible. I will give you feedback on changes that are needed. You are also welcome to submit earlier drafts if you would like earlier feedback.

- **Final Report:** At the end of the semester, each team will submit a final report. Your report will be included in a total clinic report, which will be bound. This will be distributed to the class, the library and others. Your English must be correct and polished. Formats must be formal, and the report must be done in LaTeX. See Guidelines for Final Report for more details.

Project Presentation: At the end of the semester, the class will give a formal presentation of the clinic results to our sponsor. In preparation, each team will give a practice talk toward the end of the semester. After your practice talk, the class (as well as the instructor) will critique your presentation to suggest ways to improve it. You will be graded on both your practice talk and the final presentation.

Individual Contributions/Citizenship : This will reflect attendance, your participation in-class, and your overall contribution to the project. Each student will evaluate the contributions of the members of his/her team.

Status Reports: During the execution phase of the project, each team must submit a brief (1 or 2 paragraph) status report (to the course discussion page) every other week (excluding spring break). Your status report should state 1) what has been accomplished since the last status report, and 2) what your goals are for the next reporting period.

Course Policies:

- **Late Policy:** Late assignments will be penalized by 20% per day.
- **Academic Honesty:**
 - Plagiarism is the use of another person's words or ideas without crediting that person. Plagiarism and cheating will not be tolerated and may lead to failure on an assignment, in the class, and/or dismissal from the University.
 - You are responsible for being attentive to or observant of campus policies about academic honesty as stated in the University's Student Conduct Code:
(<http://thunder1.cudenver.edu/studentlife/studentlife/discipline.html>)
- **Access, Disability, Communication:** UCDHSC is committed to providing reasonable accommodation and access to programs and services to persons with disabilities. Students with disabilities who want academic accommodations must register with Disability Resources and Services (DRS), 177 Arts Building, 303-556-3450, TTY 303-556-4766, FAX 303-556-2074. I will be happy to provide approved accommodations, once you provide me with a copy of DRS's letter.
- **Incompletes:** Incomplete grades (IW or IF) are NOT granted for low academic performance. To be eligible for an incomplete grade, students MUST 1) Successfully complete a minimum of 75% of the course; 2) Have special circumstances beyond their control that preclude them from completing graded assignments; and 3) Make arrangements to complete missing assignments with me.

Important Dates:

- TBD