

Syllabus for MATH 3250
Problem Solving Tools (Spring 2009)

1. **Instructor:** Mike Kawai

I am also the Director of the Mathematics Education Resource Center (MERC Lab) located in the Science Bldg. in Rooms 130 & 132. I spend most of my life there. If you have any complaints about me, then you should go to Professor Lynn Bennethum, the Associate Chair of our department. Her phone number is (303)556-4810.

2. **E-mail & Phone:**

Mike.Kawai@ucdenver.edu
(303)556-8532[MERC Lab]

3. **Time and Location:** Tuesdays & Thursdays 5:30 p.m. - 6:45 p.m. in the Raytheon CAD Lab.

[Enter at NC 2610.]

PLEASE TURN OFF YOUR CELL PHONES DURING OUR LECTURE PERIODS!

4. **Office Hours:** To be arranged!

5. **Website:** math.ucdenver.edu/~mkawai

Check here if you missed a lecture.

6. **Course Description:** Students learn and refine both problem solving techniques and computer programming skills. Examples, exercises, and projects are taken from a wide range of mathematical topics including algebra, calculus, linear algebra, and probability.

7. **Prerequisite:** MATH 2411 [Calculus II]

8. **Textbook:** *Ants, Bikes, & Clocks*, Briggs (SIAM, 2005).

Introduction to MATLAB 7 for Engineers, Palm (McGraw-Hill, 2005)

9. **Technology:** You might want to get the latest version of MATLAB (student edition) in the Bookstore. It's \$99 – a really good deal, if you're planning to do more coursework which might employ MATLAB. Otherwise, the appropriate version will be available here in the CAD Lab and in the MERC Lab (SI 132).

10. **Course Goals:**

- (a) To become a better problem solver.
- (b) To obtain programming skills through MATLAB.
- (c) To become an effective writer in mathematics.

11. Grading:

Depending on your personal emphasis on *programming*, you have two options:

Option A: Problem Solving = 70%, Programming = 30%

Option B: Problem Solving = 50%, Programming = 50%.

You must decide which option you prefer immediately after Test #1.

In order to keep things simple, when I grade a homework assignment, test, or project, I simply make deductions against the base value of the item in question.

The homework for Problem Solving and the homework for Programming will be kept separate. Undoubtedly, you will need to do some problem solving when completing the Programming homework, so do NOT underestimate the importance of problem solving.

There are 100 points possible in Problem Solving and 100 points possible in Programming. Both have identical component weights:

Homework	40
Test #1	30
Test #2	30

12. Homework:

- (a) We will pass out the homework cover sheets in class. (They will also be available on the website.) The due date should be displayed on each assignment.
- (b) You may turn in your assignments (early, if you're not coming to class) at the MERC Lab when it is open. Be sure that the Lab Assistant writes the date and time when it is placed in my "IN" folder.
- (c) Late homework:
If you have made some *prior* arrangement with me, then no points will be deducted. Else, I do NOT accept late homework.
- (d) We do NOT have a lot of time to answer homework questions during the lecture periods. It is imperative that you do not miss any class meetings!
- (e) All homework must be TYPED. If there are any figures, you must sketch them on *engineering pad paper*.
For each question, you MUST use Polya's Four Steps:
 - (i) Show me that you UNDERSTAND the problem. Write enough details about the problem, in order to convince me.
 - (ii) DEVISE a strategy (plan) by giving some details which show how the problem data is related to the unknown.
 - (iii) CARRY out your plan *carefully*. Check each step.
 - (iv) LOOK BACK. Consider how you can check your solution.
- (f) It is imperative that you spend as much time as possible at mastering the homework and computer work (8 hours minimum per week; some of that time can be spent in the MERC Lab working with other students!). Spend your time wisely! If you find yourself working on one problem for more than 10 minutes without any progress, then move on to another problem. Doing other problems will often clarify something which you needed to do for the original problem. If you are getting stuck on all the problems, then collaborate with other students or with me during office hours.

13. I don't give in-class Quizzes any more.

- (a) However, we insist that you constantly perform self-evaluation on your current skills. We will give you self-quizzes (with solutions) which will often predict if you are going to have trouble on the real tests. PLEASE DO THEM AS IF YOU WERE TAKING AN IN-CLASS QUIZ. If you have trouble with the self-evaluation part, then, by all means, come talk to us and we will review your work!

14. In-Class Tests:

- (a) We strive to provide a *short review* prior (the previous lecture period) to each in-class test, but our schedule is quite tight. Be sure to ask questions about the review material which will be handed out the week before each exam.
- (b) There are severe consequences for not contacting me prior to test time if you cannot take the tests at the appointed time! (E-mail!!!!)

15. Academic Honesty:

- (a) I HAVE NO TOLERANCE FOR CHEATING. Cheating of any kind on a quiz or test will result in a course grade of "F". It is possible that you will also be expelled from the University.
- (b) It is okay to collaborate on homework, but if there is obvious evidence that you are simply COPYING homework solutions from a solutions manual or from another student, then you will receive a failing grade on that assignment.
- You are responsible for being attentive to or observant of campus policies concerning academic honesty as stated in the University's Student Conduct Code.
(<http://thunder1.cudenver.edu/studentlife/studentlife/discipline.html>)

16. Drops & Incompletes: You have until Monday, April 6th to drop this course with only the instructor's (but not the Dean's) signature. The incomplete policy of the department and college is strictly enforced. Incomplete grades (I) are NOT granted for low academic performance. To be eligible for an incomplete grade, a student MUST be ALL of the following requirements:

- (a) The student successfully completed a minimum of 75% of the course.
- (b) There were special circumstances *beyond the student's control* that precluded the student from attending class and completing the course. Verification of these special circumstances is required.
- (c) The student has made arrangements to complete the missing coursework with the *original* instructor via a CLAS Course Completion Agreement.

The Course Completion Agreement is available from the CLAS Advising Office (NC 2024) or from the Department of Mathematical Sciences (6th floor of the CU-Denver Bulding).

17. Religious Holiday Accomodations: You must inform me *at the beginning of this semester*, in order for me to accomodate any rescheduling of your coursework.

18. **Disability Accomodations:** To be eligible for accomodations, students *must* be registered with the UCDHSC Office of Disability Resources and Services (DRS). The office is located in the North Classroom Bldg. [(303)556-3450]. Faculty cannot arbitrarily decide to give a student extra time, extra assistance, or other forms of aid unless it is formally mandated by the DRS.

Dean's Office Announcements:

1. See handout for all Spring 2009 information.
2. Important dates:
 - (a) 4 February (5:00 p.m.): Last to DROP a course with tuition reimbursement, request a "No Credit Grade", request Pass/Fail for a course, or register as a Fall 2007 Degree Candidate.
 - (b) 4 February (5:00 p.m.): Last day to ADD a course using a Schedule Adjustment Form.
 - (c) 6 April (5:00 p.m.): Last day for NON-CLAS students to DROP a course without a petition to the student's academic dean. After this date, no DROPS or WITHDRAWALS are allowed unless there are very special circumstances. **This is treated as an absolute deadline.**
 - (d) 20 April (5:00 p.m.): Last day for CLAS students to DROP individual classes or withdraw from all classes without a petition and special approval from the student's academic Dean. **This is treated as an absolute deadline.**