

Syllabus for MATH 2421 Section 002
Calculus III – Spring 2007

1. **Instructor:** Mike Kawai

I am also the Director of the Math Education Resource Center [MERC Lab], our department's technology lab, located in the Science Bldg., Room 132.

I'm the the Course Captain for Calculus III. The other instructor, Dr. Lynn Bennethum, is the Associate Chair of our department. If you have any complaints about me, then you must go talk to her. If you have complaints about both of us, then you must talk to the Department Chair, Dr. Mike Jacobson, directly.

2. **Time and Location:** Tuesdays & Thursdays 12:00 noon – 1:50 p.m. in NC 1608.

3. **Office Hours:** Tuesdays before class (11:20 a.m. - 11:50 a.m.).

Tuesdays & Thursdays after class (1:50 p.m. - 2:20 p.m.).

I can only meet with students in the MERC Lab (SI 130/132). MERC Lab Phone: (303)556-8532. Leave messages there after hours! Other times are available by appointment.

4. **My Office of Record:** CU-Denver Bldg. 652, (303) 556-6265 [Math Dept.: (303) 556-8442]

Unfortunately, that office is used as a storage shed for the MERC Lab and I don't really have space to entertain guests. I'm never in there, so don't look for me there. Leave messages, etc. in my folder in the MERC Lab.

5. **E-mail:** Mike.Kawai@cudenver.edu

6. **Website:** math.cudenver.edu/~mkawai

If you miss a lecture, please check here first for course materials!

7. **Course Description:** Topics include vectors, vector-valued functions, partial differentiation, multiple integration, and vector calculus.

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

9. **Textbook:** *Calculus: Concepts and Connections*, Smith/Minton (Maroon book). We cover five chapters, beginning with Chapter 08.

If you bought a new textbook with a MathZone *Student Access Kit*, then hang on to it [more on this later].

10. **Technology:** A graphing calculator (TI-89/92) is often very handy during lectures to check boardwork. I will specify if a calculator can be used on an in-class quiz. We do NOT use them during the tests. If you have a Windows PC, you may obtain a free copy of Derive5 from the MERC Lab. Follow the installation instructions very carefully!

11. **Course Goals:**

- (a) To reinforce knowledge gained from Calculus I and II.
- (b) To extend that knowledge to multivariable calculus.
- (c) To demonstrate the immediate relevance and applicability to other disciplines (Physics, in particular).

12. Grading:

	Weight
Homework & Quizzes	20%
Project	10%
Test #1	20%
Test #2	20%
Final Exam	30%

Your final course grade will be determined by the following percentage scale:

92.0 or more	= <i>A</i>
90.0 - 91.9	= <i>A-</i>
88.0 - 89.9	= <i>B+</i>
82.0 - 87.9	= <i>B</i>
80.0 - 81.9	= <i>B-</i>
78.0 - 79.9	= <i>C+</i>
70.0 - 77.9	= <i>C</i>
55.0 - 69.9	= <i>D</i>
Below 55.0	= <i>F</i>

13. Homework:

- (a) I will pass out the homework cover sheets in class. The due date should be displayed on each assignment. I also post the cover sheet on my web page.
- (b) Homework is due at the end of the MERC Lab business day (8:00 p.m.) on the date displayed on each assignment cover sheet.
- (c) Each homework assignment is worth 10 points.
- (d) Late homework:
If you have made some *prior* arrangement with me, then no points will be deducted. Else, I will deduct at least 4 points for turning in late homework.
Hint: You will receive 4 points for correctly writing up at least one homework problem. So always turn *something* in on time!
- (e) 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!
- (f) All homework must be completed on *engineering pad paper*. Only use the graph paper side when drawing scaled graphs and figures.
For each question, you MUST:
 - (i) give a short summary of the problem statement. I should NOT need to refer back to the text to determine the problem statement.
 - (ii) organize all work neatly. Do NOT cram everything together on one page. It pays to do most of the work on scratch paper *first*, and then copy your final solutions to the engineering pad.
 - (iii) box or highlight your final answer. I hate playing hide-and-go-seek when grading your assignments.

- (g) 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 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!

14. **Quizzes:**

- (a) Quizzes are worth 10 points each.
- (b) I sometimes assign odd-numbered exercises on the homework which you do not turn in. In this case, the answer is in the back of the book, and often, there is a well-written solution in the Student's Solution Handbook. These are often the subject of quiz questions as well as the exercises that you submit for grading.
- (c) If I give an in-class quiz, then it will be given at the *end* of the lecture period. If you are late arriving to the lecture, please be considerate of the other students and enter quietly.
- (d) **NO MAKEUPS ON QUIZ POINTS. NO EXCEPTIONS.**
 Since I group all homework and quiz scores together (for the 20% weight), I will drop your two lowest grades in this category.

15. **MathZone:**

- (a) This is the only form of extra credit we offer for this course. I have selected approximately 100 questions from the MathZone quiz bank. If you bought your textbook new from the bookstore, then you probably have a kit enclosed with your text. If you used MathZone during a previous semester, then your password is still probably good (ask me about it). If you wish to use the MathZone resources and you do not have a kit, then you must purchase one on-line at www.mathzone.com.
- (b) For each MathZone assignment (NOTE THAT EACH ONE HAS A SPECIFIC COMPLETION DEADLINE!), you may have 3 attempts to score 100%. At the end of each attempt, MathZone will display your score and give the correct answers to each problem. MathZone has, in the past, made some errors when scoring the quizzes. If you feel that MathZone has made an error and you want to me modify your score, you **MUST PRINT OUT** the results of that quiz and hand it in to me.
- (c) You may do the MathZone Quizzes at home or in the MERC Lab. [This is clearly a cheap ploy to lure you into the MERC Lab and spend some time with the assistants and/or other students in this course!]
- (d) MathZone automatically keeps the weighted percentage of your correct solutions. At the end of the course, you will receive **COURSE** percentage points based on your weighted percentage:

Weighted Percentage	Course Percentage Extra Credit
90% or more	5%
80% - 89.9%	4%
70% - 79.9%	3%
55% - 69.9%	2%
25% - 54.9%	1%

16. **Project:**

We will be doing a vector field project which explores magnetic fields. More details later as we approach the final chapter.

17. **In-Class Tests:**

- (a) We strive to provide a *short review* prior 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) No technology is allowed on the test. We supply you with a note sheet of formulas prior to the test.
- (c) There are severe consequences for not contacting me prior to test time, if you cannot take the tests on schedule! (Call or e-mail!)

18. **Uniform Final Exam:**

- (a) The Uniform Final is scheduled for SATURDAY, May 5th from 9 a.m. to 12 noon. Attendance at the Final Exam is mandatory. Please reserve this time and date NOW!
- (b) The Final Exam CANNOT be given in advance. Requests can be made to reschedule your exam if it conflicts with Physics or Chemistry. Else, such requests are rarely granted.

19. **Cheating:** I HAVE NO TOLERANCE FOR THIS AT ALL. 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.

20. **Drops and Incompletes:** You have until APRIL 2nd 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 (IW or IF) are NOT granted for low academic performance. To be eligible for an incomplete grade, students MUST meet *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.

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

22. **Disability Accommodations:** To be eligible for accommodations, students *must* be registered with the UCDHSC Office of Disability Resources and Services (DRS). The office is located in the Arts Bldg. in Room 177 [(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.

23. Dean's Office Announcements:

- (a) All students must always have an accurate mailing and e-mail address.
To update this information, please go to: <http://www.cudenver.edu/registrar>.
[That webpage also has all details concerning registration/payment deadlines!]
- (b) **18 January 2007** – Last day to be added to a wait-list.
- (c) **18 January to 31 January 2007** – Students are responsible for verifying an accurate Spring 2007 course schedule via the SMART registration system. Students are NOT notified of their wait-list status by the university. All students must check their schedule prior to 31 January for accuracy!
- (d) **19 January 2007 (5:00 p.m.)** – Wait-lists are dropped. Any student who was not added to a course automatically from the wait-list by this date and time **MUST** complete a Schedule Adjustment Form to be added to the class. Students are NOT automatically added to the class from the wait-list after this date and time.
- (e) **22 January 2007** – First day an instructor may approve a request to add a student to a course using a Schedule Adjustment Form.
- (f) **25 January 2007 (11:59 p.m.)** – Last day to add a course using the SMART Web Registration system. *Students MUST check their registration to verify what classes they are enrolled in.*
- (g) **31 January 2007 (5:00 p.m.)** – Last day to add structured courses without a written petition for a late add. **This is an ABSOLUTE deadline.** This deadline does not apply to independent study, internships, and late-starting module courses.
- (h) **31 January 2007 (5:00 p.m.)** – Last day to drop a Spring 2007 course for tuition refund and no transcript notation. Drops after this date will appear on your transcript. **This is an ABSOLUTE deadline.**
- (i) **31 January 2007 (5:00 p.m.)** – Last day to completely withdraw from all Spring 2007 courses with a full tuition refund and no transcript notation. Drops after this date will appear on your transcript. **This is an ABSOLUTE deadline.**
- (j) **31 January 2007 (5:00 p.m.)** – Last day for undergraduates to apply for Spring 2007 graduation. Students must see their CLAS advisor to obtain a Graduation Application.
- (k) **31 January 2007 (5:00 p.m.)** – Last day to request Pass/Fail or No Credit option.
- (l) **2 April 2007 (5:00 p.m.)** – Last day for Non-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 an ABSOLUTE deadline.**
- (m) **13 April 2007 (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 an ABSOLUTE deadline.**
- (n) No schedule changes will be granted once Finals Week has started. There are NO exceptions to this policy.

Tentative Schedule

- 1/16:** Sect. 8.1 (Vectors in 2D)
Sect. 8.2 (Vectors in 3D)
- 1/18:** Sect. 8.3 (Dot Product)
- 1/23:** HW #01 due.
Sect. 8.4 (Cross Product)
Sect. 8.5 (Lines & Planes in 3D)
- 1/25:** Sect. 9.1 (Vector-Valued Functions)
PROBABLE QUIZ.
- 1/30:** HW #02 due.
Sect. 9.2 (Calculus of Vector-Valued Functions)
- 2/01:** Sect. 9.3 (Motion in Space)
PROBABLE QUIZ.
- 2/06:** HW #03 due.
Sect. 9.4 (Curvature/Unit Tangent Vector)
Sect. 9.5 (Tangent & Normal Vectors)
- 2/08:** Sect. 8.6 (Surfaces)
PROBABLE QUIZ.
- 2/13:** HW #04 due.
Sect. 10.1 (Functions of Several Variables)
- 2/15:** Sect. 10.2 (Limits & Continuity)
PROBABLE QUIZ.
- 2/20:** HW #05 due.
Sect. 10.3 (Partial Derivatives)
- 2/22:** Sect. 10.4 (Total Differential, Linear Approximations, and Tangent Planes)
PROBABLE QUIZ.
- 2/27:** HW #06 due.
Sect. 10.5 (Chain Rule)
Sect. 10.6 (Gradient & Directional Derivative)
THIS IS THE END OF THE MATERIAL FOR TEST #1.
- 3/01:** Sect. 10.7 (Extrema of Two-Variable Functions)
REVIEW FOR TEST #1.
- 3/06:** TEST #1 (through Section 10.6)

- 3/08:** Sect. 11.1 (Double Integrals)
- 3/13:** HW #07 due.
Sect. 11.2 (Area, Volume, and Center of Mass)
Sect. 11.3 (Polar Double Integrals)
- 3/15:** Sect. 11.4 (Surface Area)
PROBABLE QUIZ. [*Then, enjoy Spring Break!*]
- 3/27:** HW #08 due.
Sect. 11.5 (Triple Integrals)
Sect. 11.6 (Cylindrical Coordinates)
- 3/29:** Sect. 11.7 (Spherical Coordinates)
PROBABLE QUIZ.
- 4/03:** HW #09 due.
Sect. 12.1 (Vector Fields)
ILAP demo.
- 4/05:** Sect. 12.2 (Curl & Divergence)
PROBABLE QUIZ.
- 4/10:** Sect. 12.3 (Line Integrals)
- 4/12:** HW #10 due.
Sect. 12.4 (Independence of Path)
- 4/17:** Sect. 12.5 (Green's Theorem)
PROBABLE QUIZ.
- 4/19:** Review and Catch-up for TEST #2.
- 4/24:** TEST #2 (through Section 12.5).
- 4/26:** Sect. 12.6 (Surface Integrals)
[Mention Stokes' Theorem.]
- 5/01:** HW #11 due.
Sect. 12.7 (Divergence Theorem)
- 5/03:** PROBABLE QUIZ.
Review and Catch-up.
- 5/05:** (**SATURDAY. 9:00 a.m. - 12 noon**) Location to be announced.
UNIFORM FINAL EXAM!