

Syllabus for MATH 2421 Section 001
Calculus III – Fall 2006

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.

2. **Time and Location:** Tuesdays & Thursdays 9:00 a.m. – 10:50 a.m. in AD 145.

3. **Office Hours:** Tuesdays & Thursdays before class (8:00 a.m. - 8:50 p.m.) in the MERC Lab (SI 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. When in doubt, try the MERC Lab!

5. **E-mail:** mkawai@math.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. **Optional Technology:** A graphing calculator is often very handy during lectures. We often check our boardwork with the TI-89/92. Calculators are NOT used on the in-class quizzes or tests. You may use technology if I give a Lab Assignment (which may count as a quiz).

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	10%
Quizzes	10%
Test #1	25%
Test #2	25%
Final Exam	30%

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

91.0 or more	=	A
89.0 - 90.9	=	A-
86.0 - 88.9	=	B+
79.0 - 85.9	=	B
69.0 - 78.9	=	C
55.0 - 68.9	=	D
Below 55.0	=	F

13. Homework:

- Homework is due at the beginning of lecture on the selected Tuesdays during the semester. (There is a guaranteed quiz on the following Thursday!)
- 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.
- For the ten specified weeks, each homework assignment is worth 10 points.
- Late homework:
If you have made some *prior* arrangement with me, then no points will be deducted.
Else, I will deduct at least 2 points for turning in late homework.
- 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!
- All homework must be completed on *engineering pad paper*. Only use the graph paper side when drawing scaled graphs and figures.
- Organize all work neatly. Please emulate the "Procedures" handout when writing up your homework problems. I want to see a short summary of each question and I should NOT need to refer back to the text when analyzing your work. It pays to do most of the work on scratch paper *first*, and then copy your final solutions to the engineering pad.
- 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!
- I do NOT drop any homework scores!!! It is important that you attempt each homework assignment!!!

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.**
I will drop your lowest quiz score at the end of the semester.

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. **In-Class Tests:**

- (a) Due to the inequity in the class meeting schedules (Labor Day falls on a Monday) between the two sections, we have reserved SATURDAY, October 7th, 9 a.m. - 11:30 a.m. as the time for a uniform Test #1. Please reserve this time and date NOW!
[Test #2 will be slightly shorter and will be given during a regular lecture period.]
- (b) 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.
- (c) No technology is allowed on the test. We supply you with a note sheet of formulas prior to the test.
- (d) There are severe consequences for not contacting me prior to test time, if you cannot take the tests on schedule! (Call or e-mail!)

17. **Uniform Final Exam:**

- (a) The Uniform Final is scheduled for SATURDAY, December 9th from 9 a.m. to 12 noon. 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.

18. **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.

19. **Drops and Incompletes:** You have until OCTOBER 30th 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.

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

21. **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.

22. 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) Students must complete and submit a drop/add form to make any schedule changes (beyond the SMART system). Students are NOT automatically dropped from a class if they stop attending or do not make tuition payments. The *student* is ultimately responsible for verifying his schedule prior to the officially published drop dates!
- (c) Late adds and late drops will be approved *only* when the circumstances surrounded the add or drop are beyond the student's control and can be documented. This will require a petition and documentation from the student.
- (d) Students wishing to graduate in December of 2006 MUST meet with their academic advisor to obtain a graduation application. The application must be completed and submitted by 6 September 2006.
- (e) Students are responsible for completing financial arrangements with financial aid, family, scholarships, etc. to pay their tuition. Students will be responsible for all tuition and fees for courses they do not officially drop! [In other words, use the proper drop/add procedures and forms!]
- (f) 24 August 2006 (11:59 p.m.) – Last day to be added to the wait-list for closed courses.
- (g) 24 August - 6 September – Students are responsible for verifying their accurate Fall 2006 registration via web SMART. Students are NOT notified of their wait-list status by the University. All students must check their schedules prior to 8 June 2006 for accuracy!
- (h) 31 August 2006 (11:59 p.m.) – Last day to add courses via web SMART system.
- (i) 6 September 2006 (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.
- (j) 6 September 2006 (5:00 p.m.) – Last day to drop a Fall 2006 course for tuition refund and no transcript notation. **This is an ABSOLUTE deadline.**
- (k) 6 September 2006 (5:00 p.m.) – Last day for undergraduates to apply for December 2006 graduation. **This is an ABSOLUTE deadline.**
- (l) 6 September 2006 (5:00 p.m.) – Last day to request Pass/Fail or No Credit option. **This is an ABSOLUTE deadline.**
- (m) 30 October 2006 (5:00 p.m.) – Last day for NON-CLAS students to drop a Fall 2006 course without a petition to their home college and receiving their Dean's approval.
- (n) 10 November (5:00 p.m.) – Last day for CLAS students to drop a Summer 2006 course. **This is an ABSOLUTE deadline. Dean's approval required.**
- (o) 10 November (5:00 p.m.) – Last day to withdraw (drop all courses) without a written petition.

Tentative Schedule

8/22: Sect. 8.1 (Vectors in 2D)

Sect. 8.2 (Vectors in 3D)

8/24: Sect. 8.3 (Dot Product)

8/29: HW #01 due.

Sect. 8.4 (Cross Product)

Sect. 8.5 (Lines & Planes in 3D)

8/31: Sect. 9.1 (Vector-Valued Functions)

QUIZ #01.

9/05: Sect. 9.2 (Calculus of Vector-Valued Functions)

Sect. 9.3 (Motion in Space)

9/07: Sect. 9.4 (Curvature/Unit Tangent Vector)

9/12: HW #02 due.

Sect. 9.5 (Tangent & Normal Vectors)

9/14: Sect. 8.6 (Surfaces)

QUIZ #02.

9/19: HW #03 due.

Sect. 10.1 (Functions of Several Variables)

Sect. 10.2 (Limits & Continuity)

9/21: Sect. 10.3 (Partial Derivatives)

QUIZ #03.

9/26: HW #04 due.

Sect. 10.4 (Total Differential, Linear Approximations, and Tangent Planes)

Sect. 10.5 (Chain Rule)

9/28: Sect. 10.6 (Gradient & Directional Derivative)

QUIZ #04.

THIS IS THE END OF THE MATERIAL FOR TEST #1.

10/03: Sect. 10.7 (Extrema of Two-Variable Functions)

10/05: Review and Catch-up.

10/07: SATURDAY. 9:00 a.m. - 11:30 a.m. Location to be announced.

TEST #1!

- 10/10:** HW #05 due.
Sect. 11.1 (Double Integrals)
- 10/12:** Sect. 11.2 (Area, Volume, and Center of Mass)
QUIZ #05.
- 10/17:** HW #06 due.
Sect. 11.3 (Polar Double Integrals)
Sect. 11.4 (Surface Area)
- 10/19:** Sect. 11.5 (Triple Integrals)
QUIZ #06.
- 10/24:** HW #07 due.
Sect. 11.6 (Cylindrical Coordinates)
- 10/26:** Sect. 11.7 (Spherical Coordinates)
QUIZ #07.
- 10/31:** HW #08 due.
Sect. 12.1 (Vector Fields)
- 11/02:** Sect. 12.2 (Curl & Divergence)
QUIZ #08.
- 11/07:** HW #09 due.
Sect. 12.3 (Line Integrals)
- 11/09:** Sect. 12.4 (Independence of Path)
QUIZ #09.
- 11/14:** Review and Catch-up.
- 11/16:** TEST #2! [Enjoy your week off after this!]
- 11/28:** Sect. 12.5 (Green's Theorem)
- 11/30:** Sect. 12.6 (Surface Integrals)
[Mention Stokes' Theorem.]
- 12/05:** HW #10 due.
Sect. 12.7 (Divergence Theorem)
- 12/07:** Review and Catch-up.
QUIZ #10.
- 12/09:** SATURDAY. 9:00 a.m. - 12 noon. Location to be announced.
UNIFORM FINAL EXAM!