Instructor name: Dr. Harry S. Mills (The 'S' is for 'Steve,' which most folks call me, but I'm not particular.) I'm a little stuck-up about being called "Mr."
Office: Ed Beaty Hall, 134K
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Class: 11:15 – 12:05, MTWR, Ed Beaty Hall BH 131

MAT 203 is a Guaranteed Transfer (GT-MA1) Course:
The Colorado Commission on Higher Education has approved MAT 202 for inclusion in the Guaranteed Transfer (GT) Pathways program in the GT-MA1 category. For transferring students, successful completion a minimum C– grade guarantees transfer and application of credit in this GT Pathways category. For more information on the GT Pathways program, go to http://highered.colorado.gov/academics/transfers/gtpathways/curriculum.html.

Course Criteria for GT-MA1:
Students should be able to:

- Demonstrate good problem-solving habits, including:
  - Estimating solutions and recognizing unreasonable results.
  - Considering a variety of approaches to a given problem, and selecting one that is appropriate.
  - Interpreting solutions correctly.
- Generate and interpret symbolic, graphical, numerical, and verbal (written or oral) representations of mathematical ideas.
- Communicate mathematical ideas in written and/or oral form using appropriate mathematical language, notation, and style.
- Apply mathematical concepts, procedures, and techniques appropriate to the course.
- Recognize and apply patterns or mathematical structure.
- Utilize and integrate appropriate technology.

Standard Syllabus Policies: Follow the link: http://www.aims.edu/inside/policies/standard-syllabus/. We generally won't be worried about those Standard Policies, as long as we don't cheat, and we show each other common courtesy and exercise common sense.

Student Conduct Statement: http://www.aims.edu/student/conduct/code-of-conduct?expanddiv=item1#expectations. This lays it all out. For my purposes, common sense, common courtesy, and academic integrity covers everything.

Required Course Materials and Resources:
Text: Calculus by Stewart, 8th Edition (Chapters 12 – 16)
E-Mail: Use E-Mail tool on Course Website (The "D2L"), by clicking on "E-Mail" link and then clicking on my name in the listing. The link to "Harry Mills" is for sending e-mail to me. Emergency e-mail: steve.mills@aims.edu
Course Website:
Please see the Course Website for this syllabus, course schedule, assignment list, lecture notes, practice tests, homework and test solutions, and links to video and other information.

1. Go to http://www.aims.edu/
2. Login using the MyAims button on the right.
3. Click on My Courses tab.

4. Select this Calculus from the list.

Private Server: http://www.harryzaims.com/ This is a bare-bones archive of resources. It runs more reliably and more quickly than the online.aims.edu server. But you do need to learn to be a monkey and navigate the directory tree.

Unlined Paper for homework: This is important for my ability to read your work and for most students' math writing to refine to the next level. Don't worry about writing too big or too pretty. Just write clearly, leave lots of room, and don't write too small. When I give tests, it'll be much the same, with unlimited paper provided, and you use what space you need.

Catalog Description: Completes the traditional subject matter of the Calculus. Topics include vectors, vector-valued functions, and multivariable calculus including partial derivatives, multiple integrals, line integrals and application. This course is a state guaranteed transfer course GT-MA1. Prerequisite(s): MAT 202 with grade of C or better, or assessment. Four credits.

Prerequisite(s): MAT 202 with grade of C or better, or assessment. Five credits.

Homework: I'm mostly looking for how you write things up, and want you to develop a solid, no-nonsense short report *style*, that combines completeness with efficiency. As far as getting the answers correct is concerned, homework solutions are freely available. It's up to you to apply yourself to the work in such a way that you are *learning* the concepts, and can apply them to similar questions on tests. The best way to do homework is to use 2 drafts:

1st draft: where you figure things out, that can be as messy as it takes.
2nd draft: where you write up what you turn in, including the question (context) and a solid narrative of what you did.

The re-write, for most, is where you go from jumping through a hoop for points to the stuff really imprinting on your brain. It's unnatural, to students, at first, to use 2 drafts, but the bigger and more advanced, the work gets, the more you're going to want the writing-to-learn separate from the writing-to-communicate. And the writing-to-communicate organizes the ideas for the reader *and* the writer. When it becomes habit, you'll find other courses, like physics and engineering, get a lot easier, because of the report-writing chops you build in Calculus.

From personal experience, my first pass, on the "Grunt" pages, got better and better, over time, understandably. This is sort of bad, because students see me writing-up a problem, start-to-finish, because it's old hat, for me, and I *can* and I want to get through as much as possible in the face time we have available. So, in the early going of the semester, I want to emphasize the 2-stage process, which I used throughout my college career, from Calculus I, on.

Most days, you will submit (well-)written homework.

Each assignment is worth 10 points. No late assignments will be accepted.

The idea is to make learning this material as efficient as possible, which means being able to look up complete solutions on any problems I assign. It's up to you to assure yourself that you can work similar problems without a net, and there are all kinds of versions of questions out there.

Make sure that your homework...

 ... is on unlined paper (copier paper, or the back of already-printed-on pages).

 ... is written on one side of each page (I won't even look at the back of any page.)

 ... is clear (What's being asked for and your work to provide it.)

 ... has your printed name, "MAT 202," and the relevant section, e.g., "S 1.1" in the top left corner. Don't put 2 sections together as one submission, without stapling them, separately, or paper-clipping them, separately.

 ... submitted with problems in the proper order. I won't go hunting for missing problems. If they're not where I expect them, I won't find them.

Before Class:

 Learn to "survey" a section, by reading or skimming it, zeroing-in on any major formulas, theorems or definitions, and writing them down, on your first pass through new material. You don't have to understand to copy it down. Writing it, the first time, is the first step in understanding and retaining the new knowledge.

 Get rolling on the exercises, to see what you're up against.

 Watch the homework videos I produced. I will typically have several videos on every section, so the help/explanation is on-demand.

 Homework will be collected at the beginning of the period.

 Homework will be due, according to the schedule.

Grading:

Chapter Tests: 70%.

Homework: 20%

Attendance: 10%

Grading scale: Until someone kicks up a fuss, I'm a 90-80-70-60 guy, when it comes to A-B-C-D cut-offs.

General Education Competencies: This course satisfies the following State GE categories: Critical Thinking, Technology, and Mathematics. (I hate that they don't list "Mathematics," first. If you can't do the math, you have no tools for the critical thinking and technology bits.)

Students with Disabilities: We really want everyone to have access to an education, here, and our Disability Access Services is one of the best. For any kind of needful accommodation, they are the people to talk to: http://www.aims.edu/student/das/.

Standard Competencies:

I. Solve problems involving curves defined parametrically which involves slope and area.
II. Demonstrate vector arithmetic
III. Describe the difference between scalars and vectors geometrically and algebraically
IV. Demonstrate the ability to work with vector valued functions. This includes limits, continuity, derivatives, and
integrals
V. Solve problems involving velocity and acceleration
VI. Solve problems involving the unit tangent and unit perpendicular vector, the unit binomial vector, curvature and
tangential and normal components of acceleration both in two space and three space.

VII. Demonstrate the ability to graph in three dimensions, and know the formulas of basic three dimensional objects such
as spheres and planes.
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VIII. work problems involving the dot and cross product.
IX. Demonstrate an understanding of the interpretation of these operations.
X work problems of the line in three space both symmetrically and parametrically.
XI. Identify the 6 basic different surfaces in three dimensions. These surfaces are the ellipsoid, hyperboloid of one and
two sheets, elliptic paraboloid, and hyperbolic, paraboloid and elliptic cone.
XII. Relate problems in the rectangular coordinates to the cylindrical coordinates and spherical coordinates.
XIII. Apply the concept of the partial derivative
XIV. understand the concept of differentiability and its relationship to the gradient. This includes working problems
involving these concepts.
XV. demonstrate an understanding of the directional derivative, level curves and level surfaces.
XVI. Solve problems involving the chain rule for many variables.
XVII. demonstrate the ability to work problems involving maxima and minima both with the second partials test and
Lagrange¿s method.
XVIII. Demonstrate the ability to work with the double and triple integral and understand applications. The student will
also understand the use of the surface area integral.
XIX. Demonstrate knowledge of vectors fields, the potential function, and the divergence and curl of a vector field.
XX Show proficiency with the line integral and independence of path.
XXI. Demonstrate ability to do problems involving surface integrals.
XXII. Demonstrate knowledge of the theorems of Green, Gauss, and Stokes and applying the theorems.
XXIII. Demonstrate a basic knowledge of linear algebra.