

**Course:** Math 223 - Vector Calculus

**Section Number:** 15

**Class Times:** Mon/Tue/Wed/Thu 10:00am - 10:50am

**Location:** Physics-Atmospheric Sciences, Room 318

**Section Website:** [http://math.arizona.edu/~jaytaylor/courses/math223\\_16/math223\\_16.html](http://math.arizona.edu/~jaytaylor/courses/math223_16/math223_16.html)

**Course Website:** <http://math.arizona.edu/~calc>

**WebAssign Website:** <http://www.webassign.net>

**Instructor:** Jay Taylor

**Office:** Math 315

**Phone:** (520)-621-2389

**Email:** [jaytaylor@math.arizona.edu](mailto:jaytaylor@math.arizona.edu)

**Personal Webpage:** <http://math.arizona.edu/~jaytaylor>

**Office Hours:** Students wishing to speak to the instructor should either come during office hours or arrange an appointment (by email). The following office hours will be in effect from Monday August 22 until Friday December 9. There will be no office hours on public holidays.

- Wednesday 11:00am - 12:00pm in the [Bear Down Think Tank](#),
- Wednesday 4:00pm - 5:00pm in Math 315,
- Friday 10:00am - 11:00am in Math 315.

**Textbook:** *Multivariable Calculus*, Sixth Edition by Hughes-Hallett et al. published by Wiley.

**Course Description:** Vectors, differential and integral calculus of several variables. Examinations are proctored.

**Course Objectives:** Upon successful completion of this course, the student will be able to:

- Recognize and sketch surfaces in three-dimensional space;
- Recognize and apply the algebraic and geometric properties of vectors and vector functions in two and three dimensions;
- Compute dot products and cross products and interpret their geometric meaning;
- Compute partial derivatives of functions of several variables and explain their meaning;
- Compute directional derivatives and gradients of scalar functions and explain their meaning;
- Compute and classify the critical points;
- Parameterize curves in 2-space and 3-space;
- Set up and evaluate double and triple integrals using a variety of coordinate systems;

- Evaluate integrals through scalar or vector fields and explain some physical interpretation of these integrals;
- Recognize and apply Fundamental theorem of line integrals, Green's Theorem, Divergence Theorem, and Stokes' Theorem correctly.

**Communication with Students:** It is the student's responsibility to keep informed of any announcements, syllabus adjustments or policy changes made during scheduled classes, by email, or through the section website. Preferably all communication with the instructor should be via email.

**Attendance:** Students are expected to attend every scheduled class. In addition to this guidance the following constitutes this course's policy towards attendance.

- The UA's [policy](#) concerning Class Attendance, Participation, and Administrative Drops will be adhered to.
- The UA's [policy](#) regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable.
- Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored, see <http://deanofstudents.arizona.edu/absences> for more information.
- Any student missing the first two class meetings or having more than three unauthorized absences may be administratively dropped from the course.

It is the student's responsibility to notify the instructor in advance of an absence related to religious observation or an activity for which a Dean's excuse has been granted, and to arrange for how any missed work will be handled. It is also the student's responsibility to keep informed of any announcements, syllabus adjustments or policy changes made during scheduled classes.

**Classroom Behavior:** To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming, and inclusive environment where all of us feel comfortable with each other and where we can challenge ourselves to succeed. To that end, our focus is on the tasks at hand and not on extraneous activities (texting, chatting, reading a newspaper, making phone calls, web surfing). Use of electronic devices during class time is permitted with the expectation that they are used as a constructive learning tool and not for the aforementioned extraneous activities. All mobile phones are expected to be set to SILENT mode (not simply vibrate).

This course supports elective gender pronoun use and self-identification; rosters indicating such choices will be updated throughout the semester, upon student request. As the course includes group work and in-class discussion, it is vitally important for us to create an educational environment of inclusion and mutual respect.

**Grading and Assessment:** Your performance in the course is assessed via a mixture of homework, in-class quizzes, midterm exams, and a final exam, broken down as follows.

- **Homework and Quizzes:** (100 points) Homework will be submitted in two formats throughout the semester. A computer grading program called [WebAssign](#) will be used for problems assigned

from the text (see below for information concerning WebAssign). Hand-written homework showing all work with proper notation will also be submitted. These problems will come from the text and/or from a set of problems created by your instructor. Homework will be announced in advance and will not be accepted late. It is permitted to collaborate on homework assignments, *however* each student must write their solution on their own and in their own words. Identical, or highly similar solutions, will not be tolerated.

In addition to hand-written homework there may also be short in-class quizzes. These quizzes will be announced in advance. There will be no make-up quizzes. The ratio of in-class quizzes to hand-written homework will be decided throughout the semester. Homework and quizzes shall be returned promptly. Any student wishing to raise a question or query concerning a homework or quiz, in particular their grade, must do so within 7 days of the script being returned. A final homework score based on 100 possible points will be computed. Of these 100 points 50 will be obtained from the WebAssign problems and the remaining 50 will be computed from the hand-written homework and in-class quizzes.

- **In-Class Exams:** (400 points) Four in-class exams are tentatively scheduled for:

Tuesday, September 13,      Thursday, October 6,  
Monday, November 7,      Thursday, December 1.

Each exam will be worth 100 points. There will also be a 20 point Preliminary material exam given on Thursday August 25. This exam will cover differentiation and integration skills that are essential for success in Math 223. Calculators and integration tables are not allowed on the Preliminary Exam. Review problems can be found on the [course website](#).

All electronic devices must be turned off during all exams. Silence and vibration modes are not allowed. In general, there will be no make-up exams in the course. However, in complex and unusual circumstances which are beyond your control, a make-up exam may be given on a case-by-case basis. This will require providing a detailed account of the situation and supporting documents. Approval in these cases is at the sole discretion of the instructor and/or the dean of students. According to university policy, no exams will be held on the week of December 5. Exams will be returned to the students in class. Any student wishing to raise a question or query concerning their exam, in particular their grade, must do so within 7 days of the exam script being returned.

- **Final Exam:** (200 points) The final exam is a common department exam. It is scheduled for:

– Tuesday, December 13 from 1:00 - 3:00pm.

The room for the final exam will be announced by your instructor, and will be posted on the [course website](#). Additional information and a study guide can be found on the [course website](#). The University's [Exam regulations](#) will be strictly followed.

- **Final Letter Grades:** Your final course grade will be determined by a percentage of the 720 total possible points in the course. Grades will be no lower than the following:

| Grade | Percentage | Points  |
|-------|------------|---------|
| A     | 100-90%    | 648-720 |
| B     | 80-90%     | 576-647 |
| C     | 70-80%     | 504-575 |
| D     | 60-70%     | 432-503 |
| E     | 0-60%      | 0-431   |

**Calculators:** A graphing calculator is an important tool that will be used in this course. Any model is allowed on the *final exam* provided it cannot receive a wireless signal. Students are expected to have a working calculator for each exam. No calculator swapping is permitted during exams.

**Accessibility and Accommodations:** Our goal in this classroom is that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, please let me know immediately so that we can discuss options. You are also welcome to contact the Disability Resource Center (520-621-3268) to establish reasonable accommodations. For additional information on the Disability Resource Center and reasonable accommodations, please visit <http://drc.arizona.edu>. If you have reasonable accommodations, please plan to meet with me by appointment or during office hours to discuss accommodations and how my course requirements and activities may impact your ability to fully participate. Please be aware that the accessible table and chairs in this room should remain available for students who find that standard classroom seating is not usable.

**Students Withdrawing from the Course:** Must be made in accordance with the University's [withdrawal policy](#). You may drop the class without a W through September 4 using UAccess. The class will appear on your UAccess record, but will not appear on your transcript. If you withdraw from the class between September 5 and October 30 you will receive a grade of W. The University allows withdrawals after October 30 through November 18, but only with the Dean's approval. Late withdrawals are dealt with on a case by case basis, and requests for late withdrawal with a W without a valid reason may or may not be honored.

**Incompletes:** Must be made in accordance with University policies, which are available [here](#).

**Computing Resources:** Information about using computers on campus, setting up a UA email account, and computer support can be found [here](#). A list and map of open access computing facilities on campus can be found [here](#).

**University Policies:**

- The UA [Threatening Behavior by Students Policy](#) prohibits threats of physical harm to any member of the University community, including to oneself.
- Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercises must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA [Code of Academic](#)

[Integrity](#) as described in the UA General Catalog.

- The University is committed to creating and maintaining an environment free of discrimination; see the UA [Nondiscrimination and Anti-harassment Policy](#) for more details.

*Note:* Information contained in the course syllabus, other than the grade and absence policy, may be subject to change with advance notice, as deemed appropriate by the instructor.