MTH 254 (010): VECTOR CALCULUS I (4 credits – CRN 50316)

Spring 2019

Instructor: Dr. Filix Maisch, maischf@math.oregonstate.edu

Instructor Office Hours: Kidder 368C, MW 2-3:15pm (starting week 2, Wed. hrs in MSLC – KIDD 108H)

Class Meetings: MWF 9-9:50 AM in Gilbert 124 (with a Thursday recitation – times vary)

TA: Barton Gattis, gattisw@oregonstate.edu

TA office hours: Kidder 272, Mon./Tue. 5-7pm (and Tue. 12-3pm in MSLC – KIDD 108H)

*** Please take advantage of these office hours to get help!! We are here for you. ***

Prerequisites: Math 252 (or Math 252H) with a C- or better.

Textbook: Calculus, Early Transcendentals, Briggs, Cochran, et al. (2nd edition)

Catalog Course Description: A survey of vectors, vector functions, and curves in two and three dimensions. Functions of many variables, with a focus on surfaces in three dimensions, partial derivatives, gradients, and directional derivatives. Multiple integrals in rectangular, polar, cylindrical, and spherical coordinates. Along the way, physical and geometric applications are included.

Course Content: Vectors, dot products, cross products, vector-valued functions and curves, the calculus of curves including motion, arc length, functions of many variables and their limits, partial derivatives, the Chain Rule, directional derivatives and the gradient, tangent planes, optimization of functions of two variables, double integrals, polar coordinates and double integrals in polar coordinates, triple integrals, spherical coordinates and cylindrical coordinates including triple integrals in these coordinate systems, change of variables.
Student Conduct Code: Students are expected to be familiar with Oregon State University’s Expectations for Student Conduct. Please review these at the following web link:

http://studentlife.oregonstate.edu/code

Course Specific Learning Outcomes: A successful student in Math 254 will be able to:

1. Represent vectors both algebraically and geometrically and be able to use vector methods effectively in problem solving.
2. Use the dot and cross product to solve problems in a geometrical or physical setting.
3. Differentiate and integrate vector-valued functions.
4. Apply partial derivatives, directional derivatives, and gradients to solve problems of multivariable differential calculus such as max-min problems and rates of change of physical processes in space.
5. Evaluate multiple integrals in rectangular, polar, spherical, and cylindrical coordinates with applications such as volumes and mass.

Grading: Your grade is determined by a syllabus quiz, online homework AND written homework, participation in recitation group work activities, unannounced lecture discussion quizzes, two evening midterms, and a final. NO EXTRA CREDIT is available in this course.

The course will be graded as follows

- Syllabus quiz 2%
- Online homework 9%
- Written homework 9%
- Participation in recitation activities: 9%
- Unannounced lecture discussion quizzes 7%
- Midterms 40% (each 20%)
- Final 24%

Your grade in the course will not be harder than:

A-/A 90% - 100%, B-/B+/B 80% - 89.99%, C+/C+ 70% - 79.99%, D 60%-69.99%, F 0%-59.99%.

Syllabus Quiz: A short (canvas) quiz testing your knowledge of this syllabus will be available during weeks 1 and 2. It’s due on Sunday, April 14th. You ONLY get one attempt on each question.

Exams: There will be two midterms, and a cumulative final exam. Calculators nor notes are NOT allowed on exams. The final does NOT replace a midterm. Tests are not allowed to be made-up unless the circumstances are truly exceptional and contact requesting the accommodation is made PRIOR to the test. We will use Gradescope to grade exams. There will be an access link through Canvas (and an email sent out to encourage you to sign up). Through this online platform you will be able to see your graded exam and be able to request a regrade on any of the problems.

- First Midterm: Tuesday evening, April 23rd at 7:00-8:20 PM, location TBAD
- Second Midterm: Tuesday evening, May 21st at 7:00-8:20 PM, location TBAD
- Final Exam: Thursday afternoon, June 13th at 4:00-5:50 PM, location TBAD
Recitation Group Activities: Recitation activities allow you to experiment with new and upcoming ideas within a group of peers. Your teaching assistant (TA) will be present to help facilitate conversation and provide guidance. Quite often the TA may not directly provide the answers to your questions. Instead the TA may respond with questions to help guide you to your own answer. Arriving to recitation on time, staying for the entire 50 minutes, and participating in the activity is required for the recitation grade. These activities will not be turned in. However, you are expected to complete the entire lab activity even if there was not enough time to complete it during recitation. There is no way to make up a missed recitation, unless you can prove you missed it due to an OSU-based obligation.

Written Homework: Every week there will be a paper-and-pencil written homework assignment, which you are to turn-in during recitation. This is intended for you to gain a deeper understanding of the material, and to give you good examples of what open-ended test problems might look like. You will be graded on completeness, as long as what you turn-in looks relevant to the question. Detailed solutions will be provided.

Online Homework: Online homework can be accessed through Canvas. E-mail me ASAP if it doesn’t work. Due dates are set, but you are allowed to work on the homework late for no penalty. It is EXPECTED that you make every effort to complete the homework on time.

Lecture Discussion Quizzes: Given during some of the lectures (unannounced) are questions to be answered through a Canvas quiz, which will open during lecture and close 5 minutes after the lecture. During the window of time the quiz is open you are given unlimited chances to answer. You are encouraged to work with your fellow classmates and to share your work/answers. No make-ups are allowed unless you can prove you missed class due to an OSU-based obligation. The lowest 3 of these will be dropped.

Students With Disabilities: Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at http://ds.oregonstate.edu. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

MSLC: The Math and Statistics Learning Center (MSLC) is in Kidder 108H. You can go there for free drop-in tutoring. It is open STARTING week 2 going through Dead Week. The hours are MTWTh 9-5, Fri 9-4, and Sunday through Thursday evenings 7-10.

Inclusion Statement: It is my intent that students from all diverse backgrounds and perspectives be well-served by this course, that students’ learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: gender identity, sexual orientation, disability, age, socioeconomic status, ethnicity, race, religion, culture, perspective, and other background characteristics. Your suggestions about how to improve the value of diversity in this course are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups.

Student Evaluation of Courses: The online Student Evaluation of Teaching system opens to students the Monday of dead week and closes the following Sunday. Students will receive notification, instructions and the link through their ONID. They may also log into the system via Online Services. Course evaluation results are extremely important and used to help improve courses and the learning experience of future students. Responses are anonymous (unless a student chooses to “sign” their comments agreeing to relinquish anonymity) and unavailable to instructors until after grades have been posted. The results of scaled questions and signed comments go to both the instructor and their unit head/supervisor. Anonymous (unsigned) comments go to the instructor only.
Course (Tentative) Calendar:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11.1-11.2</td>
<td>11.3 Recit. (WH 1 due)</td>
<td>11.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>11.5</td>
<td>11.6 Recit. (WH 2 due)</td>
<td>11.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>11.8</td>
<td>11.9 Recit. (WH 3 due)</td>
<td>12.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td><strong>Canceled:</strong> Optional Review Exam 1 (7 PM)</td>
<td>12.2 Recit. (WH 4 due)</td>
<td>12.3</td>
<td>12.4 Recit. (WH 5 due)</td>
<td>12.6</td>
</tr>
<tr>
<td>5</td>
<td>12.4</td>
<td>12.5 Recit. (WH 6 due)</td>
<td>12.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>12.7</td>
<td>12.8 Recit. (WH 7 due)</td>
<td>13.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>12.9</td>
<td>13.1 Recit. (WH 7 due)</td>
<td>13.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td><strong>Canceled:</strong> Optional Review Exam 2 (7 PM)</td>
<td>13.3 Recit. (HW 8 due)</td>
<td>13.4</td>
<td>13.5 Recit. (HW 9 due)</td>
<td>13.5</td>
</tr>
<tr>
<td>9</td>
<td>MEMORIAL DAY (no class)</td>
<td>13.5 Recit. (HW 9 due)</td>
<td>13.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>13.6</td>
<td>13.7 Recit. (HW 10 due)</td>
<td>Final Review</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: Syllabus Quiz due Sun. 4/14/2019. For each Tuesday evening group midterm, the class on the preceding Monday is canceled. These are our optional review sessions (with no lecture discussion quiz). The final is Thursday, June 13th, at 4 PM (Location TBAD).