

Greg Patterson
2018-02-05

Vector Calculus
MATH 200
Spring 2018
MTWThF 9:00-9:50

Instructor: Dr. Xiaoyue Luo

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Office Hours: M-F 9:50-10:50, M 1:30-2:30, T 1:30-2:30, F 9:50-11:30 and also by appointment.

Suggested Text: Multivariable Calculus, Early Transcendentals, 2017 Ed., Guichard.

Text can be viewed online: <https://www.whitman.edu/mathematics/calculusonline/>

Or download PDF: <https://www.whitman.edu/mathematics/multivariable/multivariable.pdf>

Course Goals and Objectives:

- To introduce the student to the basics of multivariate differential and integral calculus, and its applications.
- To improve the student's problem-solving abilities.
- To increase the student's confidence in working through mathematical challenges.
- To increase the student's mathematical maturity.

Advising Information: The prerequisite is MATH 175, Calculus II. Vector calculus is required of majors in mathematics and physics. In addition, it is recommended for students interested in chemistry, biology, computer science, and economics.

Attendance: Although not specifically required, regular attendance is highly recommended. In addition, students are responsible for all material and announcements presented in class.

Office hours: Students are encouraged to visit during office hours. In order for office hours to be the most productive, students should come prepared with specific questions, bring notes from class, textbook, and work in progress. Study your notes and work on the examples given in class first before you start to work on your homework. If you are having difficulty with the homework, make sure that you are working on the practice problems. Do not get discouraged or frustrated during office hours if very few direct questions are answered. For every question that you ask, I will most likely have at least one question for you. An important part of truly understanding challenging material is working through the frustration that is bound to arise. However, when you finally make the necessary connections, you will find your mastery of the material significantly greater if you have struggled and overcome your own hurdles, rather than simply being told the answer to a specific problem. Space is available in Math Alley for students to work on homework and prepare for exams which can make use of office hours more convenient and productive for as many students as possible.

Evaluation: Grades in this course are based upon the point total of the scores from three exams (50%), homework (23%), the final exam (25%), and your Responsibility and Engagement (2%). The following grading scale can be used to estimate grades for individual homework and exams; however, course grades will be determined from point totals, not from interim grades.

Tentatively, letter grades will be correspond to the following percentages:

A-, A:	90-100%
B-, B, B+:	80-89%
C-, C, C+:	65-79%
D:	55-64%

However, I reserve the right to curve the scale.

Xiao Yue Luo

Course Responsibility and Engagement: A small portion of your course grade is dependent on the degree to which you show that you have engaged in the course, have understood and followed the guidelines in the course syllabus, and have shown that you understand and embrace the idea that your education, and specifically your success in this course, is ultimately your responsibility.

Academic Honesty: I adhere to the college policy on academic honesty, as published in the Linfield College Course catalog. (From the Linfield College Course Catalog) Academic work is evaluated on the assumption that the work presented is the student's own, unless designated otherwise. Anything less is unacceptable and is considered academically dishonest. Academic dishonesty includes all forms of cheating, such as using or attempting to use unauthorized materials, information, or study aids in any work submitted for credit; changing answers after graded work has been returned; making unauthorized changes to an exam, quiz, or assignment. Knowingly helping or attempting to help another violate the College policy on academic work is a form of academic dishonesty. See the Linfield College Course Catalog for information on the procedure to be used in dealing with academic dishonesty.

Disability Statement: Students with disabilities are protected by the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. If you are a student with a disability and feel you may require academic accommodations please contact Learning Support Services (LSS), as early as possible to request accommodation for your disability. The timeliness of your request will allow LSS to promptly arrange the details of your support. LSS is located in Melrose Hall 020 (503-883-2562). We also encourage students to communicate with faculty about their accommodations.

Tentative Schedule

<p>Feb. 5 Vectors (12.2) 6 Vectors (12.2) 7 Dot Product (12.3) 8 Cross Product (12.4) 9 Equ of Lines, Planes (12.5, 12.6)</p> <p>12 Equ of Lines, Planes (12.5, 12.6) 13 Planes; Surfaces 14 Surfaces 15 Vector-Valued Functions (13.1,2) 16 Calc of Vector-Valued Funs (13.1,2)</p> <p>19 Change of Parameter; Arc Length (13.1,2) 20 Unit Tangent, Normal, Binormal Vectors (13.4) 21 Curvature (13.3) 22 Review 23 Exam 1</p> <p>26 Curvature (13.3) 27 Funs of Several Variables (14.1) 28 Limits and Continuity (14.2)</p> <p>Mar. 1 Limits and Continuity (14.2) 2 Limits and Continuity (14.2)</p> <p>5 Partial Derivatives (14.3,6) 6 Partial Derivatives (14.3,6) 7 The Chain Rule (14.4) 8 The Chain Rule (14.4) 9 Worksheet</p> <p>12 Directional Derivatives (14.5) 13 Tangent Planes, Normal Vectors 14 Maxima and Minima (14.7) 15 Maxima and Minima (14.7) 16 Review</p> <p>19 Exam 2 20 Lagrange Multipliers (14.8) 21 Lagrange Multipliers (14.8) 22 Double Integrals (15.1) 23 Double Integrals, Centers of Gravity (15.1,3)</p> <p>26 Break 27 Break 28 Break 29 Break 30 Break</p>	<p>Apr. 2 TBA 3 Double Integrals, Centers of Gravity (15.1,3) 4 Double Integrals Cylindrical Coordinates (15.2) 5 Double Integrals Cylindrical Coordinates (15.2) 6 Triple Integrals (15.5)</p> <p>9 Triple Integrals (15.5) 10 Triple Integrals (15.5) 11 Triple Integrals (15.5) 12 Cylindrical and Spherical Coordinates (15.6) 13 Cylindrical and Spherical Coordinates (15.6)</p> <p>16 Change of Variables (15.7) 17 Change of Variables (15.7) 18 Change of Variables (15.7) 19 Review 20 Exam 3</p> <p>23 Vector Fields (16.1) 24 Line Integrals (16.2) 25 Line Integrals (16.2) 26 Line Integrals (16.2) 27 The Fundamental Thm of Line Integrals (16.3)</p> <p>30 Green's Thm (16.4)</p> <p>May 1 Green's Thm (16.4) 2 Green's Thm (16.4) 3 Surface Integrals (16.7) 4 Surface Integrals (16.7)</p> <p>7 Surface Integrals (16.7) 8 Stokes' Thm. (16.8) 9 Stokes' Thm. (16.8) 10 Stokes' Thm. (16.8) 11 The Divergence Thm. (16.9)</p> <p>14 The Divergence Thm. (16.9) 15 Review 16 Review 17 Reading Day 18 Symposium</p> <p>21 22 23 Final Exam 8:00 a.m.</p>
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Section numbers correspond to the 15th edition textbook.

