

SYLLABUS MULTIVARIABLE CALCULUS 251 FALL 2008
Sec 01,02,03

PREREQUISITE: Calc 152 or the equivalent.

TEXT: Calculus with Early Transcendentals, Custom Edition for Rutgers University.

Author: Jon Rogawski. **Publisher:** Freeman Custom Publishing.

Note 1: You may also use the Non Customized first edition of Calculus with Early Transcendentals by Jon Rogawski published by Freeman.

Note 2: (change of class days) Our class WILL meet TWICE for LECTURE during the week of Nov 24. We will meet for lecture on Mon Nov 24 as usual, AND we will meet for lecture on Tues Nov 25 because on on Tues Nov 25, Rutgers will follow Thursday's schedule of classes.

INSTRUCTOR: Gus Rainsford **EMAIL:** rainsfor@math.rutgers.edu

OFFICE HOURS: Every Monday 3:00-4:00 (unless announced otherwise) in room 611 in the Hill Center on Busch Campus. By appointment, on Thursday from 3:00-4:00 in room 611 in the Hill Center.

CALCULATOR: A Graphing Calculator may be used for workshops and possibly some quizzes. Calculators will **NOT** be permitted on exams.

User ID: We will be using the PCs and printers in the Rutgers computer labs. You should have a Rutgers user id and RU Connections ID Card with an RU Express Account. This will enable you to save your work on a Rutgers "webdrive" that will be available to you for the semester. The id card / RU Express Account will enable you to print your maple labs on the printers in the Rutgers computer labs.

GRADING: Grading will be out of a total 520 pts broken down as follows:

Quizzes/Workshops: 80 pts Maple Labs: 40 pts
Exam 1: 100 pts Exam 2: 100 pts Final: 200 pts

EXAMS: No materials other than the formula sheets provided with an exam may be used on exams. Exam I is *tentatively* scheduled for Mon Oct 13 .

Exam II is *tentatively* scheduled for Thurs Nov 20 . The **Final Exam** is a **three hour comprehensive exam** and is scheduled on **Mon Dec 22, from 8:00 AM to 11:00 AM**. The room will be announced in class. **Note: Firm dates for exams will be announced in class.**

MISSED EXAMS: Makeup exams are not given. If you are absent on the day of an exam (for some acceptable reason), you must bring in a formal letter from the dean's office in order for your absence to be excused and to have the portion of the final that covers the missed exam count for the missing exam. You must contact either me, or the math office 445 2390 within 3 days of the missed exam. Missed exams, which are not excused, are recorded as a 0 grade.

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QUIZZES/WORKSHOPS: Each week in recitation, either a quiz will be given or a workshop will be assigned unless announced otherwise. The two lowest scores out of ten will be dropped. The remaining eight scores will be used toward your grade. Workshops are problem sets that are worked on in class in small groups. Certain problems will be selected to be written up and handed in to your TA to be graded. Workshops will NOT be accepted at lectures or during office hours or via email (NO EXCEPTIONS!). Late workshops will not be accepted. Makeup quizzes are not given.

MAPLE LABS: There is a computer lab component for this course in which you will use the Maple Symbolic Manipulation System. There will be 4 maple assignments that will be graded. They are to be handed in to your TA at the recitation class. Maple assignments will NOT be accepted at lectures or during office hours or via email (NO EXCEPTIONS!). Late maple labs will not be accepted. **On Tuesday Sept 9 your recitation will be held in the Arc Computer Lab, PC room 116.** This class is NOT optional.

CLASS PARTICIPATION: You are responsible for attending all class meetings. Poor attendance will be a factor in deciding borderline grade situations. You are responsible for all material covered in class as well as all announcements made in class. Announcements regarding workshops, maple labs, quizzes and exams, etc. will not be sent to students via email or phone or the web. Make arrangements with other students to get class notes and any announcements in the event you miss class. Not knowing the day of an exam, quiz or assignment is NOT an acceptable excuse for missing the exam, quiz or assignment.

HOMEWORK PRACTICE PROBLEMS: Homework problems are not collected or graded. Students are encouraged to do them as they are practice problems for quizzes and exams. Additional problems may be assigned in class.

ACADEMIC INTEGRITY: Students are expected to do their own work and abide by the restrictions regarding calculators and testing aids such as formula sheets. Violations will result in a zero grade for the assignment, exam or quiz and possible further academic discipline for all involved.

HW PRACTICE PROBLEMS FROM ROGAWSKI

12.1 Vectors in the Plane	1, 5, 9, 11, 12, 15, 17, 21 – 25, 40, 33 – 47 odd
12.2 Vectors and Lines in Three Dimensions	5, 7, 11, 13, 19, 25 – 39 odd, 45 – 52
12.3 The Dot Product & Angle Between Two Vectors	1, 13 – 31 odd, 49, 52, 57, 63
12.4 The Cross Product	1, 5, 13 – 19 odd, 20 – 26, 33, 34, 41 – 44
12.5 Planes in Three Dimensions	1 – 27 odd, 31 – 43 odd, 44, 49 – 53
12.6 Cylinders and Quadric Surfaces (as a maple lab)	1 – 21 odd, 24 – 26
12.7 Cylindrical and Spherical Coordinates	1 – 15 odd, 23, 24 – 60, odd 48, 50
13.1 Vector Valued Functions and Space Curves	3 – 9, 11 – 15, 18, 25, 28, 29, 31
13.2 Calculus of Vector Valued Functions	1 – 15 odd, 14, 19 – 21, 26 – 29, 30, 31 – 37 odd, 41 – 53 odd
13.3 Velocity Vectors, Arc Length and Speed	1, 3, 9, 13, 14, 15
13.4 Curvature, Unit Tangent and Unit Normal Vectors	1, 3, 5, 7, 17, 21
13.5 Motion in Three-Space	3, 5, 6, 11 – 17 odd, 32
14.1 Functions of Two or More Variables	7, 20, 23, 27, 36, 40
14.2 Limits and Continuity in Several Variables	5, 15, 27, 35
14.3 Partial Derivatives	3, 4, 5, 9, 10, 11, 13 – 31 odd 35 – 39 odd, 41 – 47 odd, 53 – 57 odd 63 – 69 odd, 76
14.4 Differentiability, Linear Approximations & Tangent Planes	3, 5, 7, 9, 10, 11 – 19 odd, 27, 29, 33
14.5 The Gradient Vector and Directional Derivatives	7 – 43 odd
14.6 The Chain Rule	1 – 17 odd, 20, 23, 25, 27, 29, 30
14.7 Optimization in Several Variables	1, 3, 7, 17, 19, 24, 25, 27, 29, 35 – 39 odd
14.8 Lagrange Multipliers	2, 7, 11, 13, 15
15.1 Double Integrals over Rectangles	1, 3, 5, 10, 15, 17 – 37 odd, 44
15.2 Double Integrals over More General Regions	3, 5, 11, 15 – 33 odd, 36, 37 – 55 odd, 59
15.3 Triple Integrals	1 – 17 odd, 18, 19, 25 – 33 odd
15.4 Integration in Polar, Cylindrical, & Spherical Coords	1 – 9 odd, 13 – 19 odd 27, 28, 30, 39, 47, 51, 53, 55, 59
15.5 Change of Variables in Multiple Integrals	1, 5, 14, 15, 21, 29, 33, 37
16.1 Vector Fields	1, 3, 10, 14 – 17, 22 – 25, 27
16.2 Line Integrals	3, 13, 21, 27, 29, 31, 35, 39, 40
16.3 Conservative Vector Fields	1 – 21 odd
16.4 Parameterized Surfaces and Surface Integrals	1, 5, 8, 11, 19, 21, 37
16.5 Surface Integrals of Vector Fields	1, 6, 9, 12, 15, 17, 23
17.1 Green's Theorem	1, 3, 6, 9, 12, 23, 27
17.2 Stokes' Theorem	1, 5, 9, 11, 19, 23
17.3 The Divergence Theorem	1, 5, 7, 11, 14, 15, 18