

MAT 284 Business Calculus Section M100

Spring 2010

Instructor and Course Supervisor: Prof. Moira McDermott

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(Please always include MAT284 or Math284 in the subject line.)

Office Hours: MW 2:30-3:30, T 1:00-2:00, WF 10:30-11:30

Lectures: MW 3:45-5:05 pm in Heroy Auditorium. Lectures will introduce new material, will cover selected homework problems, and will cover some review before examinations. Exams will be given in Heroy Auditorium.

Recitations: Each student enrolled in the lecture section 100 must also be enrolled in a recitation section 101, 102, 103, 104, 105, or 106. In most recitation classes there will be a quiz, so be sure that you attend your recitation. TAs will consider homework problems in the recitations and that is the primary place to get questions answered.

Course Description: MAT 284 Business Calculus (3 credits). One-variable differential and integral calculus. Applications to business and economics. MAT 284 may not be taken for credit after successful completion of MAT 285 or MAT 295.

This course is designed for students in the School of Management, students planning to minor in management and other students with a serious interest in management and economics. It has less theory than the other introductory calculus courses, and extensive applications, all involving management and economics. MAT 284 is not a part of any sequence meeting the divisional perspectives requirement in the Natural Sciences and Mathematics, and so is usually not an appropriate course for students in the College of Arts and Sciences. However, it is a second course in the Quantitative Skills requirement for the Arts and Sciences core. It is certainly not appropriate for anyone planning to major in mathematics, science, or engineering.

Prerequisite: MAT 194 (Precalculus) or equivalent.

Text: *Introductory Mathematical Analysis, for Business, Economics and the Life and Social Sciences*, by Ernest F. Haeussler, Jr. and Richard S. Paul, Prentice-Hall, Twelfth Edition, 2007.

Calculators: A TI-84 or TI-83 is required. Calculators with symbolic manipulation capabilities such as the TI-89 or TI-92 may not be used on quizzes or exams.

Homework: Homework for the entire semester is listed on the attached sheet; it is due the date following the listed date. It will not be collected, unless otherwise specified during lecture or recitation. Questions on examinations and quizzes will be modeled on homework questions, so it is essential to practice on homework problems. The best procedure to follow is this: Do each homework set by its due date, check your answers against those in the back of the book, and keep a record of those homework questions with which you have difficulty. Watch for these and similar problems to be done in lecture and ask about them in recitation.

Attendance: You are expected to attend every class, every recitation, every hour exam, and the final exam. If you miss a class, it is your responsibility to obtain a copy of the lecture notes for that class from another student. You are also responsible for any announcements about changes to the course schedule, the exam schedule, or the course requirements that were made during that class.

Tests: There will be a quiz in most recitations and possibly in some lectures. There will be three exams in lecture during the semester, as well as a final exam covering the entire course. The final exam will be given on Monday May 10, 2010, in a two-hour period between 8:00 AM and 2:30 PM. The exact time and location of your final examination will be announced in lecture. The final examination is given at this announced time and at no other time. **Do not make plans to leave campus before 3:00 PM on Monday May 10, 2010.**

Make-up quizzes/exams: No make-up quizzes will be given. At least one quiz score will be dropped when your final grade is calculated. The departmental policy for a missed exam is that, if you can justify the absence to the satisfaction of your instructor, then your grade on the relevant portion of the final exam will be substituted for the missing grade. Typically, you will not be allowed to make up more than one grade this way. If you cannot justify your absence from an exam, then you will receive a grade of zero for that exam. If you know in advance that you will have to miss a quiz or exam because of some major event, you should discuss this matter with your instructor before the exam.

Grading. Your semester average will be based on your performance on the final exam, the three hour tests and quizzes. These components will be weighted as follows:

Final Exam	25%
3 Hour Tests	20% each
Quizzes and Homework	15%

Your semester course grade will be determined from your semester average as follows:

93 – 100	A	77 – 79	C+
90 – 92	A-	73 – 76	C
87 – 89	B+	70 – 72	C-
83 – 86	B	60 – 69	D
80 – 82	B-	Below 60	F

Academic Integrity: The Syracuse University Academic Integrity Policy holds students accountable for the integrity of the work they submit. Students should be familiar with the Policy and know that it is their responsibility to learn about instructor and general academic expectations with regard to proper citation of sources in written work. The policy also governs the integrity of work submitted in exams and assignments as well as the veracity of signatures on attendance sheets and other verifications of participation in class activities. Serious sanctions can result from academic dishonesty of any sort. For more information and the complete policy, see <http://academic.integrity.syr.edu>

Cheating: Forbidden. Penalties for cheating on a test or quiz can range from receiving a grade of zero on the test or quiz to receiving an F in the course. All instances of academic dishonesty will be reported to the College Committee for Student Standards.

Students with Disabilities: If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), <http://disabilityservices.syr.edu>, located in Room 309 of 804 University Avenue, or call (315) 443-4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue students with documented disabilities Accommodation Authorization Letters, as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible. You are also welcome to contact me privately to discuss your academic needs although I cannot arrange for disability-related accommodations. Making arrangements with ODS takes time. Do not wait until just before the first test.

Problem Resolution: Please inform your TA or your instructor promptly of any problems you have with this course. Problems you cannot resolve with your TA should be brought without delay to the attention of the course supervisor, Professor McDermott. Problems you cannot resolve with her should be brought to the attention of the Associate Chair, Professor McConnell.

Getting Help: Your instructor and recitation instructor will be holding regular office hours and will make appointments with students having class conflicts with their scheduled office hours. In addition, the Mathematics Department offers regular math clinics. These will be set up by the second week of the semester and a schedule of the clinics will be posted outside the math office.

Cell Phones: all electronic devices other than the calculator should be turned off and put away during class. Calculators on cell phones are not to be used on tests or quizzes.

Assignments. This is a tentative schedule. Assignments may be adjusted to accommodate a change in pacing of the lectures. Each homework set is due in the class following the date on which it is listed. Homework will not be collected, unless otherwise specified during lecture or recitation.

- 1/20** **1.1:** 9, 10, 11, 13, 17, 25, 27, 28, 29, 32, 33, 39, 40. **1.3:** 1, 3, 5.
- 1/25** **1.3:** 6, 7, 8, 9. **2.1:** 5, 9, 13, 17, 21, 23, 25, 27, 29, 30, 31, 39, 41, 42, 45, 46, 47, 48, 49. [Particularly important examples of functions are profit, total cost, total revenue, fixed cost (a constant function) and the explicit examples that arose in the previous homework.]
- 1/27** **2.2:** 1, 3, 9, 11, 13, 15, 17, 19, 21, 31, 32, 33.
2.3: 1, 3, 5, 7, 9, 11, 13, 14, 15, 17, 19.
- 2/1** **2.5:** 1, 3, 5, 9, 11, 13, 16, 18, 23, 39, 41, 44. **3.1:** 1, 3, 5, 7, 10, 11, 13, 15, 19, 20, 21, 22, 23, 24, 25, 27, 29, 31, 33, 35, 37, 39, 51, 53, 55, 57, 59, 61, 71, 72.
Write a general linear equation of the line which passes through $(-1, 3)$ and is parallel to the line $y=4x-5$.
- 2/3** **3.2:** 1, 3, 5, 7, 9, 15, 17, 19, 21, 23, 25, 26, 27. **3.6:** 1, 3, 9, 15, 17, 18, 19.
- 2/8** **3.6:** 21, 24. **4.1:** 1, 3, 11. **4.2:** 1, 3, 4, 5, 7, 9, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49.
- 2/10** **4.2:** 50, 51, 52, 53, 55, 59. **4.3:** 1, 3, 5, 7, [omit 9], 11, 12, 13, 15, 16, 17, 19, 20, 21, 23, 25, 29, 31, 33, 35, 37, 39, 40, 41, 45, 46, 47, 48.
- 2/15** Catch-up & Review for Exam 1.
2/17 **Exam 1.**
- 2/22** **10.1:** 1, 3, 9, 11, 13, 15, 17, 21, 22, 23, 25, 27, 28, 29, 31, 33, 35, 37, 38, 39.
10.2: 10, 13, 21, 23, 25, 27, 29, 39, 49, 59.
10.3: 1, 5, 9, 12, 25. Know the definition of e .
- 2/24** **11.1:** 3, 5, 7, 9, 12, 15. Know the definition of derivative. Be able to write it or recognize it, both in general and for a specific function.
11.2: 1, 2, 3, 7, 11, 15, 17, 23, 25, 33, 37.
- 3/1** **11.2:** 41, 45, 47, 57, 67, 69. **11.4:** 1, 3, 5, 15, 17, 21, 27, 33, 35.
- 3/3** **11.1:** 19, 21, 23, 25. **11.2:** 75, 77, 83. **11.5:** 1, 3, 5, 7, 9, 11, 15, 19, 23, 25, 33, 41.
- 3/8** **12.1:** 1, 3, 5, 11, 15, 25, 27, 29, 31, 39, 41, 43.
12.2: 1, 3, 5, 9, 10, 11, 12, 13, 15, 17, 21.

- 3/10** **12.7:** 1, 3, 5, 7, 9, 11, 13, 15, 17, 19. **11.1:** 11 (use the definition of derivative!)
12.2: 25, 27, 28.
- 3/22** **11.3:** 13, 15, 19, 21, 23, 25, 30, 41, 45. **11.4:** 59, 60, 65, 66, 72. **11.5:** 65, 66, 71.
12.2: 33, 35, 41, 45.
- 3/24** Catch-up & Review for Exam 2.
3/29 **Exam 2.**
- 3/31** **14.2:** 1, 3, 5, 7, 9, 13, 15, 17, 21, 26, 27, 36, 38, 39, 41, 43.
14.3: 1, 2, 13, 15, 9, 10, 11, 21.
- 4/5** **13.1:** 1, 3, 5, 7, 9 (include sketch), 11 (include sketch), 14, 18, 23, 35. 53, 57, 59,
 $y=2x^3+3x^2+6x+7$ (include sketches), 67, 68, 70, 71.
- 4/7** **13.3:** 7, 9, 29, 35, 47, 53, 63, 65, 68. **13.4:** 3, 5, 8.
- 4/12** **13.6:** 5, 7, 11, 17, 18, 19, 20, 27.
- 4/14** **12.3:** 1, 3, 5, 7, 9, 11, 15, 16, 17, 19. (You may use the fact that
 $dq/dp=1/(dp/dq)$.) [You need to know how elasticity of demand is related to
revenue, as described at the end of **12.3**.]
- 4/19** **13.6:** 27, 29. [Hint: Read Example 5 in **13.6**.]
Do the following three problems that view the elasticity of demand as the ratio in
the first paragraph of **12.3**:
#1) At \$5 per ticket a company has 1,000 customers. At \$4 per ticket
there will be 1,200 customers. Compute the elasticity and tell whether the
price should be increased or decreased.
#2) Fare = \$16. A \$2 decrease will cause a 5% increase in demand.
Compute and tell whether the price should be increased or decreased.
#3) Same as #2, but a \$2 increase and a 15% decrease.
[You are not responsible for the proof at the end of **12.3**, but you need to know
the conclusions of that proof.]
- 4/21** **13.6:** 31, 32, 34. **14.3:** 20.
- 4/26** Catch-up & Review for Exam 3.
4/28 **Exam 3.**
- 5/3** Review for Final Examination.

5/10 (Monday) Final Examination. (The final covers the entire course and is given during a 2
hour period [to be specified later] between 8:00 am and 2:30 pm.)