

MATH 152

Calculus for Business and Social Sciences

General Description

Introduction

MATH 152 is a survey of differential and integral calculus of one variable. It is a terminal course and will not prepare you for MATH 232. If you plan to apply to UNC-Chapel Hill's business school, you may have to take an OR (Operations Research) class instead of MATH 152; check with your advisor. Student mastery of pre-calculus algebra skills is assumed from the start. Word problems requiring calculus techniques for their solution form a large portion of the material. Clear and correct mathematical communication of your thinking is a must.

In order to take this course, a score of 520 or higher on the SAT Subject Test, Math, Level 1 or 2 (formerly SAT II, Math, Level I or Level IIC exam); a score of 2 on the Calculus AP exam (or BC subscore); or a passing grade in MATH 110 is required. You may not take this course if you have received credit for MATH 231.

The course is broken down into lessons. Each lesson presents learning objectives, discussion, and examples to highlight the main ideas and problem-solving techniques used in the text. The sample problems in the lessons augment the examples in the text and will help prepare you for the quizzes and tests.

Course Materials

The text required for MATH 152 is:

Applied Calculus for the Managerial, Life, and Social Sciences: A Brief Approach, 8th edition (2009) by S.T. Tan.

You may purchase the text from Friday Center Books & Gifts by visiting the Friday Center, by using the book order form following this section of the manual, or by ordering online at <https://s4.its.unc.edu/HigherGrounds>.

Calculators

You will need to have a scientific or graphing calculator for this course. However, calculators that perform symbolic manipulation (such as the TI-89) are **not** allowed. You may use your scientific calculator on all quizzes and tests in this course. Note that exact answers (for example, $\sqrt{2}$ instead of 1.4213562, $\frac{1}{3}$ instead of 0.333333) are **required on all quizzes, tests, and the final**, unless decimal approximations are requested.

Lecture Notes

The lecture notes included in this manual have been written to augment your reading of the text. These notes are not meant to replace a thorough reading of the sections assigned in each lesson. Instead, you should use the lecture notes as a supplement to the reading, a source of more examples, and a guide in bringing the various learning objectives together.

Sample Problems

The sample problems introduced in the lessons are meant as a supplement to the example problems in the text. None of the example problems in the text have been duplicated, in order to provide you with as many different examples as possible.

Practice Problems

At the end of each lesson there will be a list of practice problems from the text. The only way to master the material presented in this course—in fact, in any math course—is to practice. While these practice problems are not graded, it will be **impossible** (or at least really, really difficult) to pass this course without doing **all** of the practice problems. It is very important that you not only attempt the practice problems but that you also understand them before going on to attempt a quiz or unit test. There is an answer key provided in the back of your text. Further, for any assigned practice problem for which no answer is provided in the text, you will find the answer in Appendix A at the back of this manual.

Quizzes and Tests

The written work that you must submit will be in the form of thirteen quizzes and three unit tests, followed by a comprehensive, supervised final exam.

The quizzes will cover material presented in the one or two lessons preceding each quiz, and will represent material seen in the practice problems. Each quiz is worth 20 points. There is no time limit for the quizzes, but you should note how long it takes you to complete the quiz. Each quiz is designed to take between 15 and 20 minutes. If you take longer than this to complete a quiz, you should consider reviewing the material presented in the previous lessons. Your lowest three quiz grades will be dropped, and the remaining ten quiz grades will count for 10 percent of your final grade. You may use your textbook and lecture notes when taking a quiz, but I would recommend that you attempt each problem without them.

The unit tests occur after each unit. Each is a **closed-book** and **closed-notes** test that is worth 100 points. Each test counts for 19 percent of your course grade. Again, there will be no time limit for the unit tests, but each was designed to take 90 minutes to complete.

Study Suggestions

As mentioned earlier, this manual is meant as a supplement to the text book. When attempting each lesson, you should read both the assigned pages from the text and the lecture notes in this manual. The following is a list of learning strategies that should make your study efforts more productive:

- Carefully read the Lesson Objectives as you begin each lesson. Pay special attention to main ideas.
- Carefully read the textbook sections assigned for the lesson.
- Reading a math textbook should involve paper and pencil. Don't just read the example problems, work through them with the book as a guide.
- Now carefully read through the lecture notes. Again, work through the sample problems as you go.
- Now you are ready to attempt the practice problems. If you get stuck, you should refer back to your notes and sample problems. You should also check your answers to the odd-numbered exercises in the back of the

textbook. Remember that these practice problems will **not** be submitted for grading.

- Carefully review the graded quizzes and tests when they are returned to you. It is important to learn from any mistakes made so that they are not repeated on future assignments.
- When it comes time to take a unit test, it is important that all prior quizzes have been returned to you for review. If you submit a quiz and unit test too close together, there might be a mistake on the quiz, which you then repeat on the test because you hadn't received the quiz back. If time is of the essence, and you feel the need to push on, you can always begin the next lesson before taking the unit test.

Final Exam and Grading

There will be a supervised, comprehensive final exam in addition to the quizzes and unit tests. You will schedule your exam through the Self-paced Courses office. See the page titled "How to Schedule a Self-paced Courses Examination" in the back of this manual.

You will have three hours to complete the final exam. Your exam will count for 33 percent of your final course grade. There will be a minimal number of points that you must score on the final exam to pass the course. Also note that your final course grade may exceed your exam grade by no more than one letter grade.

Your final course grade will be determined as follows:

$$\begin{aligned} & 0.10 \times (\text{quiz average}) \\ & + 0.19 \times (\text{unit test 1} + \text{unit test 2} + \text{unit test 3}) \\ & + 0.33 \times (\text{final exam}) \end{aligned}$$

Bring your calculator to the exam, but remember that calculators that perform symbolic manipulation, such as the TI-89, are NOT allowed.