

*Instructor's Syllabus***MATH 1340 - 1350****Graphing calculators required in all sections.**

## Course Descriptions:

**MATH 1340. Calculus and Analytic Geometry IA** (3) Limits, the derivative, differentiation techniques and applications of the derivative. MATH 1340-1350 is a two semester sequence which includes all of the topics from MATH 1310. Not open to students with a grade of C or higher in MATH 1310 or 1260. Prerequisite: (1) two years of high school algebra, one year of geometry, one-half year trigonometry, ACT math score of 24 or higher, AND satisfactory score on the departmental placement test; or (2) grade of C or higher in MATH 1280, 1290, or 1300.

**MATH 1350. Calculus and Analytic Geometry IB**(3) The definite integral; the fundamental theorem; indefinite integrals; integration by parts, by tables and by substitution; and applications of definite and indefinite integration. A grade of C or higher in Math 134 or satisfactory placement exam score.

**General information;**

MATH 1340-1350 is a two semester sequence which includes all of the topics from MATH 1310. Completion of the sequence will satisfy any requirement or prerequisite that is met by MATH 131 or MATH 1260. Thus Math 1340 and Math 1350 satisfy the mathematics requirements for the Bachelor of Science degree, the College of Business and any other program which requires MATH 1310 or MATH 1260.

**The Text and Course Content;**

Smith and Minton, *Calculus, Second Edition*, McGraw-Hill, 2002. (The rest of the book is used for MATH 232 and 233.)

**MATH 1340** begins with an informal development of the fundamental concepts of limit, continuity and the derivative. Techniques of differentiation, including derivatives of the trigonometric and exponential functions and implicit differentiation are covered. The chain rule should be covered carefully and emphasized. Applications of the derivative to related rates, Newton's method, differentials and tangent line approximations constitute the third body of material.

Tests and review time are included in the estimated times below which are based on a semester schedule of 3 days a week. Use your best judgment regarding topics to be skimmed and keep your eye on the calendar.

		Pages	Days(43 tot.)
Chapter 0	Preliminaries	80	6
Chapter 1	Limits and Continuity (omit 1.5, 1.6)	44	9
Chapter 2	Differentiation	91	19
Chapter 3	Applications of Differentiation (3.1-3.4 only)	36	9

**MATH 1350** begins with the first derivative test and geometric applications of the derivative and moves on to antiderivatives, Riemann sums, the definite integral and the Fundamental Theorem of Calculus. The last part of the course covers the standard geometric applications of the definite integral and applications of the indefinite integral to initial value problems and separable differential equations. This makes 1340-1350 more compatible with Math 1260 which includes this topic. Use your best judgement regarding topics to be skimmed or omitted (parts of Sec. 5.4 - 5.7 might make good choices) and keep your eye on the calendar.

		Pages	Days (42 total)
Chapter 3	Applications of Differentiation (3.5 - 3.8 only)	42	10
Chapter 4	Integration	80	17
Chapter 5	Applications of The Definite Integral	77	15

**A graphing calculator is required!** TI-83PLUS or TI-84 is recommended for purchase, but you should tolerate other models that students might already have. The text is compatible with a TI-81-82-83 or 85-86. If a student has another model or brand and knows how to use it then there is no need to purchase a TI, but if they own a different calculator and don't know how to use it then they are expected to learn its use on their own or to purchase a TI-83. If they don't have a graphing calculator tell them to buy a TI-83. Only rare individuals can cope with a TI-85-86. You are not expected to provide instruction for calculators other than the TI-81-83 and to do so would take an unwarranted amount of class time.

The text illustrates some uses of the graphics calculator and gives problems and examples which make it easier for both the first time instructor and the student. You should use your best judgement in adapting these ideas to your classes and may choose to omit some of the suggested uses. Use what you feel comfortable with on your first pass through the calculus and keep an open mind.

**Equipment and other support available.** The Department has overhead projector pads that can be checked out. You won't need to use the projector very often after the first couple of class days, if at all .

**Suggestions for first time users.** Use the brief review section at the beginning to introduce students to the graphic capabilities of the TI-8x. Take a very informal approach and motivate limits and their algebraic properties numerically and graphically with the calculator (avoid epsilon delta arguments). Assume the usual properties of limits and give a more formal development of the concepts of continuity and derivatives.

In general, you should view the calculator primarily as a tool for exploring or understanding the calculus and secondarily as a computational device. Use of the calculator should have little or no change in your expectations on exams. If you are requiring calculators for the first time be conservative until you develop a sense of how it affects students performance. Direct testing on the use of a calculator is questionable.