

Math 274

Calculus 2

Course Description

Mike O'Leary**Office:** 316K Stephens Hall**Office Phone:** 410-704-4757**Email:** moleary@towson.edu**Office Hours:** MW 3:15-4:15, Th 1-2.**Autumn 2003****MW** 2:00 – 3:15, ST 115**Th** 2:00 – 2:50, ST 208**F** 2:00-2:50, ST 206**Section:** 003**Prerequisites:** MATH 273.

Catalog Description: Differentiation and integration of exponential, logarithmic, and inverse trigonometric functions; techniques of integration and applications; indeterminate forms; improper integrals; sequences and series of numbers; power series.

Learning Objectives:

- Students will understand the basic applications of integration, including the formal definition of the logarithm and exponential function, the use of the integral to compute the area between curves, and to find the volume of a region using cross-sections or shells. The student will also understand applications of the integral to work and to averages. The student will be able to use the integral to compute arc length and the area of a surface of revolution. The student will be fluent with basic applications to the physical and social sciences.
- The student will understand the basic techniques of computing antiderivatives, including substitution, integration by parts, trigonometric integrals, trigonometric substitution, and partial fractions. The student will know the basic methods used for the numerical evaluation of integrals and their error estimates.
- The student will understand some elementary techniques used to solve ordinary differential equations, including the use of a slope field, and the techniques for solving separable equations. The student will understand basic applications of differential equations.
- The student will understand infinite sequences and series. The student will be able to determine whether or not a series converges, and shall be able to approximate the value of such a series. The student will also understand power series and their applications, including Taylor's Theorem.

Academic Integrity: The nature of higher mathematics requires that students adhere to accepted standards of academic integrity. Violations of academic integrity include cheating, plagiarism, falsification and fabrication, complicity in academic dishonesty, personal misrepresentation and proxy, bribes, favors and threats. Cheating is a serious offense that will have grave consequences for your academic life.

Students who violate these standards will either fail the course outright or, at the instructor's discretion, may merely receive a zero on any assignment for which the student receives inappropriate assistance. Violations of these standards will be referred to the administration for possible additional action.

Instructional Material: The primary required text is *Calculus, Early Transcendentals*, fourth edition, by Stewart. Also required is *Laboratory Explorations for Single-Variable Calculus using Mathematica* by Boules, Goodson, Kim and O'Leary. A graphing calculator is required.

Methods of Instruction: We shall use lectures, class discussion, group work, and laboratory work.

Attendance: Attendance is expected; you should only miss a class for a compelling reason. If you do miss a class, you are responsible for any material that you miss, including any homework assignments

given in that class.

Homework: The only way to learn mathematics is by doing problems, problems, and more problems. In addition to the labs, homework will be assigned on a regular basis, and will form a substantial portion of your final grade. Expect to spend a substantial amount of time studying and working on homework. The general rule is two to three hours outside class for each hour inside; this translates to about 10-15 hours of homework and personal study per week.

Quizzes: Occasional unannounced quizzes may be given. For purposes of determining the final grade, they shall be treated as a homework assignment.

Computer Laboratory: There will be weekly computer based laboratory exercises. Laboratory assignments are due, unless otherwise specified, at the beginning of class one week after the assignment is given.

Each lab report shall be well written and conform to the usual rules for English composition. Merely listing the obtained answers is unacceptable. The report may be in the form of a Mathematica notebook.

Guidelines for Homework and Laboratory Reports:

1. Late work will not be accepted without a compelling reason.
2. Assignments are required to be neat, clean, and paper-clipped or stapled.
3. Assignments must include the author's name, and a brief description of the assignment.
4. Students are allowed to discuss homework problems with their classmates, however all work that is turned in must be the student's own work.
5. Any assignment that does not meet these criteria may receive a deduction in score, or more generally will simply be rejected.

Midterms: There shall be four midterm examinations, tentatively scheduled for September 22, October 15, November 10, and December 3. Attendance is expected. Make-up exams shall only be given for compelling reasons; all excuses are subject to verification.

Final Exam: The Final Exam is scheduled for Monday, December 15 from 3:00 p.m.- 5:00 p.m. The final exam will not be rescheduled. Attendance is expected; a make-up exam will not be given without an extremely compelling reason. The final exam shall be comprehensive.

Final Grade: Final grades shall be determined by the following method:

Midterms	30%
Final	30%
Homework/Quizzes	25%
Labs	15%

Note the weight of the final. A student who does not complete 70% of the laboratory assignments may not receive a grade of C or better.

The last day to withdraw from the course with a grade of "W" is November 7.

Help: If you have difficulty completing a homework assignment, do not hesitate to ask for help, either from your friends, or from me. You are welcome to stop by my office, for whatever reason, and at whatever time, even if there are no office hours scheduled then. If you wish, you may also simply send an e-mail message.

Web Page: My web page at <http://www.towson.edu/~moleary> has an archive of all of the old exams that I have given while at Towson.