



M162 Sec 1C APPLIED CALCULUS
DEPARTMENT OF APPLIED ARTS AND SCIENCES
SPRING 2013 SYLLABUS

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Lial, Greenwell, and Ritchey
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If I have seen further it is only by standing on the shoulders of giants. -- ISAAC NEWTON

Welcome to Applied Calculus! M162 is a one-semester three-credit course; it is an introductory calculus course surveying the principal ideas of differential and integral calculus with emphasis on applications and computer software. The course is intended primarily for students who do not plan to take higher calculus. Placement in M162 is based on an appropriate placement score or your successful completion of M121 (College Algebra), M122 (College Trigonometry), or M151 (Precalculus) with a grade of C- or better (B- or better is recommended).

Be certain that you are enrolled in the proper math class at the beginning of the semester. You may not be able to switch into a more appropriate class after the first week. If you have any concerns about your placement please contact me immediately.

Learning Goals and Objectives: Applied Calculus studies calculus of real-valued functions of a single real variable. The primary goal of this course is for students to learn to solve standard calculus problems. A secondary goal of this course is for students to come to comprehend the concepts and theories that underlie calculus and how they are applied to real world problems. Such an understanding allows the student to analyze new problems in order to construct solutions, even though the problems may be unfamiliar. After successfully completing this course a student should be able to:

- Define limits and solve limit problems.
- Explain what it means for a function to be continuous, recognize continuous functions, and apply results about continuity to problem solving.
- Explain derivatives and compute them numerically, using limits, and with "rules".
- Analyze physical, engineering, biological and economic problems (e.g., related rates, optimization, marginal analysis, linearization problems) by creating calculus-based mathematical models; interpret results in writing.
- Analyze qualitative features of functions (e.g., domain, range, intercepts, asymptotes, discontinuities, regions of monotonicity and concavity, critical points, extreme points, singular points, inflection points).
- Interpret results in writing and by drawing a graph (without using a calculator).
- Explain definite and indefinite integrals and compute them numerically and using "rules" (through substitution).
- Solve area and volume problems using integration.

This course has been designed for you. Your willing participation is essential if you plan to succeed in this course. No one can teach you if you are not engaged and ready to learn. You need to do your part by preparing on your own to the best of your ability. Put in some effort. Don't fall behind. Challenge yourself. Ask questions! If you keep up with the homework, you will find the material makes sense and the obstacles are manageable. I cannot emphasize enough how important it is for you to be diligent in your study habits. Different students have different learning styles, but every student can improve with effort. Find the technique that works best for you.

ATTENDANCE: M162 is the rare math class in which attendance and participation affect your final grade. You cannot coast in this course. You will need to be involved, present solutions (you will have time to prepare, of course), and work with your classmates in order to succeed. I believe this is the best way to learn the material and I am depending on the camaraderie of the class to help motivate.

At the same time, I still strongly believe that respect and appreciation are key attributes to an optimal learning experience. Not only do I insist that you treat me with respect, you also need to show the same attitude towards your classmates. I am seeking a win-win outcome here; nobody should feel slighted or belittled.

It is impossible to stress strongly enough how important it is for you to be diligent in your study habits. Pay attention and cultivate a positive attitude! No matter how you feel about studying math, personal responsibility and a solid work ethic are great attributes to be able to claim as your own. If you keep up with the work, the subject makes sense and the challenges are manageable. If you feel threatened by math, practice some of the techniques used to reduce math anxiety; there are links on page 4 of the syllabus.

University of Montana policy states:

*Students who are registered for a course but do not attend the first two class meetings may be required by the instructor to drop the course. This rule allows for early identification of class vacancies to permit other students to add classes. **Students not allowed to remain must complete a drop form or drop the course on the internet (<http://cyberbear.umt.edu>) to avoid receiving a failing grade.** Students who know they will be absent should contact the instructor in advance.*

Students are expected to attend all class meetings and complete all assignments for courses in which they are enrolled. Instructors may excuse brief and occasional absences for reasons of illness, injury, family emergency, or participation in a University sponsored activity. (University sponsored activities include for example, field trips, ASUM service, music or drama performances, and intercollegiate athletics.) Instructors shall excuse absences for reasons of military service or mandatory public service.

MYLABSPLUS (MLP): MyLabsPlus is an innovative way for you to do homework and take quizzes with immediate feedback; MyLabsPlus also keeps you on task and using your developing math skills. Every section of the M122 text covered in class has a corresponding assignment in MyLabsPlus; homework can be retaken as often as you wish until the unit closes. Review exercises at the end are optional but recommended.

There is a chapter quiz for each of the chapters covered in class as well; each quiz can be taken twice and the higher score is the recorded score. **NOTE** that these assignments and chapters are open for specific times and in a specific order. Check the MyLabsPlus calendar frequently and attend class to be sure you are keeping current with your assignments. You must keep up with the progression in order to succeed in this course. The direct link to MyLabsPlus is umt.edu/mylabsplus or access the site through OneStop: <http://onestop.umt.edu/>.

CALCULATOR: A graphing calculator is required for M162; the Department of Applied Arts and Sciences recommends and uses Texas Instruments models TI-83 or TI-84 (regular or plus editions). Calculators with symbolic manipulation capabilities (e.g. TI-89, TI-92) will not be allowed in testing situations.

TUTORING: Math tutoring is available for all UM students. Check for hours at the ASC on the COT campus (AD06) and at math@Mansfield on the Mountain Campus: <http://www.umt.edu/math/MLC/default.htm>.

STUDENTS WITH DISABILITIES: The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students (DSS). If you think you may have a disability adversely affecting your academic performance, and you have not already registered with DSS, please contact DSS in EL154 (mountain campus), telephone number 243-2243. Their website is <http://life.umt.edu/dss/>. I will work with you and DSS to provide an appropriate accommodation.

IN-CLASS TESTS: Several tests will be given in class. They give you an opportunity to demonstrate what you have learned, and are not intended to intimidate you. Graphing calculators removed from their cases are permitted, but may not be shared with other students during the test. All scratch work must be done directly on the test and returned to me when leaving the classroom.

A single page (8½"x11") of notes (both sides) may be used to assist you during tests.

When circumstances prevent you from taking a test at the scheduled time, contact me PRIOR to the time of the test to report your absence. Absences are excused only for reasons of illness, injury, family emergency, or a University-sponsored activity. Arrangements for a make-up test must occur within a week of the scheduled exam date. Failure to arrange a make-up test within a week of the scheduled exam date will result in a score of zero for the test.

Corrected tests will be returned within one week after the test date. If you have questions regarding the grading of your test, please wait until after class to discuss it.

FINAL EXAM: The final exam for this class is comprehensive and is worth 150 points. The exam will be given in class. You may have a page (8½" x 11") of notes (both sides) to assist you. If you think that you have math anxiety, I suggest that you prepare carefully; there are also links on p. 4 addressing math anxiety that may help you. The University of Montana also offers workshops that you may choose to attend.

DROPPING AND ADDING COURSES OR CHANGING SECTIONS, GRADING OR CREDIT STATUS:

Students are expected, when selecting and registering for their courses, to make informed choices and to regard those choices as semester long commitments and obligations.

Documented justification is required for dropping courses by petition. Some examples of documented circumstances that may merit approval are:

- Error in registration,
- Accident or illness,
- Family emergency, or
- Other circumstances beyond the student's control

Reasons that are **not** satisfactory include:

- Forgetting to turn in a drop slip
- Protecting a student's grade point average

The opportunity to drop a course for the current term ends on the last day of instruction before scheduled final exams. Dropping a course taken in a previous term or altering grading option or audit status for such a course is not allowed. The only exceptions are for students who have received a grade of NF (never attended).

INCOMPLETES: A grade of incomplete (I) will only be considered when all three of the following are true:

1. The student has been in regular attendance and passing up to three weeks before the end of the academic semester.
2. Factors beyond the student's control make it impossible to complete the course on time.
3. The instructor and the student agree that there is a reasonable probability that the student will be able to make-up the work required to complete the course and specific arrangements are drawn up and signed by both.

A student who receives an incomplete has one calendar year to resolve the incomplete (I) before it automatically reverts to a failing grade (F).

GRADING POLICIES: M162 must be completed with a grade of C or better in order to contribute towards satisfying the UM Math Literacy requirement. Auditing M162 or taking it as a Credit/No Credit course will not fulfill the requirement.

The final grade will be computed as follows:

Attendance/Participation	100 points
MyLabsPlus homework:	300 points (30 @ 10 points each)
MyLabsPlus quizzes:	350 points (7 @ 50 points each)
In-class tests:	500 points (5 @ 100 points each)
Final exam:	<u>150 points</u>
TOTAL	<u>1400 points</u>

Letter grades correspond to numerical scores according to this plan:

A	B	C	D	F
90-100%	80-89%	70-79%	60-69%	Below 60%

ACADEMIC CONDUCT: All students must practice academic honesty as defined by the Student Conduct Code, available at <http://life.umt.edu/vpsa/documents/StudentConductCode1.pdf>. Academic misconduct is subject to an academic penalty by the instructor and a disciplinary sanction by the University.

M162 SPRING 2013 TENTATIVE COURSE OUTLINE:

Week 1: Jan 28 – Feb 1 Chapter R <u>Note: All students should pass the MyLabsPlus Chapter R Quiz with a grade of 75% or better to remain in M162. This is <i>not</i> a requirement, but it is a strong recommendation.</u>
Week 2: Feb 4 – Feb 8 Chapter 1 ★ Test 1 ★
Week 3: Feb 11 – Feb 15 Chapter 2
Week 4: Feb 18 – Feb 22 ☺ Presidents Day Feb 18 ☺ Chapter 2, cont'd/Chapter 3
Week 5: Feb 25 – Mar 1 Chapter 3, cont'd ★ Test 2 ★
Week 6: Mar 4 – Mar 8 Chapter 4
Week 7: Mar 11 – Mar 15 Chapter 4, cont'd/Chapter 5
Week 8: Mar 18 – Mar 22 Chapter 5 (cont'd) ★ Test 3 ★
Week 9: Mar 25 – Mar 29 Chapter 6
☺ Apr 1 – Apr 5 ☺ Spring Break
Week 11: Apr 8 – Apr 12 Chapter 6 (cont'd) ★ Test 4 ★
Week 12: Apr 15 – Apr 19 Chapter 7
Week 13: Apr 22 – Apr 26 Chapter 7, cont'd/Chapter 8
Week 14: Apr 29 – May 3 Chapter 8, cont'd ★ Test 5 ★
Week 15: May 6 – May 10 Review
🗨 Final Exams May 13 – 17 The final exam for this class is scheduled for Tuesday, May 14th from 10:10 am – 12:10 pm in this classroom.

See the MyLabsPlus calendar to find the opening and closing dates for MyLabsPlus tests and homework.

Important Dates and Deadlines is found at <http://www.umt.edu/registrar/forms/pdf/ImportantDates201330nv2.pdf>

Finals Week Schedule available at <http://umt.edu/registrar/students/finalsweek2/Spring.aspx>

Academic Support Center (Missoula College): AD06, phone # 243-7826 (need 2 days' notice for make-up tests)

Math Learning Center (Math Bldg, Main Campus): Basement — used for taking make-up tests

math@Mansfield: Mansfield Library — drop-in tutoring center <http://www.umt.edu/math/MLC/default.htm>

Academic calendar available at <http://www.umt.edu/provost/academiccalendar.html>

OneStop (look for MyLabsPlus link): <http://onestop.umt.edu/>

Some useful websites: <http://www.khanacademy.org/>

<http://www.calculus.org/>

<http://www.intmath.com/>

<http://www.prenhall.com/divisions/esm/app/graphing/ti83/> great TI calc tutorial

http://www.prenhall.com/divisions/esm/app/calc_v2/ graphing calc help

<http://incompetech.com/graphpaper/> (free graph paper generator)

<http://www.mathacademy.com/pr/minitext/anxiety/> Coping with Math Anxiety

<http://mtsu32.mtsu.edu:11064/anxiety.html> Help for Math Anxiety

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