

INSTRUCTOR: Mary Anne Beard

COURSE: Math 162

TITLE: Calculus I

MEETING TIMES: Tu, Th: 8:00-9:45

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OFFICE HOURS: Monday 5:15-6:15 in ASC, and others by appointment

TEXTBOOK: Thomas' Calculus Early Transcendentals, 14th Edition, authors: Thomas, Weir, Hass, Publisher: Addison Wesley, (chapters 1-5)

HOMEWORK PROGRAM: MyMathLab – course ID: **beard86395**

<https://www.pearsonmylabandmastering.com/northamerica/mymathlab/>

THE UNIVERSITY OF NEW MEXICO — LOS ALAMOS
COURSE SYLLABUS
MATH 162 CALCULUS I (4 credit hours)

Catalog Description:

Limits. Continuity. Derivative: Definition, rules, geometric and rate-of-change interpretations, applications to graphing, linearization and optimization. Integral: definition, fundamental theorem of calculus, substitution, applications to areas, volumes, work average. Prerequisite: (ACT=28-31 or SAT=640-700 or MATH 150 or Compass College Algebra >66) and (MATH 123 or Compass Trig >59) or (ACT ≥ 32 or SAT ≥ 700).

Course Objectives and Learning Outcomes

Assessment

UNM-Los Alamos conducts ongoing assessments of student learning so it can continue to improve its curriculum to give you the best education possible. The mechanism for this assessment will be selected by your instructor and may include exams, projects or other assignments. The assessment will focus on the learning outcomes listed in this syllabus. The data from this assessment will be collected anonymously. It will be reported to the department, the Office of Instruction and posted on the web. The information collected will be used to make improvements to curriculum and teaching. This assessment is not a reflection of your grade and is not a grading exercise; it is simply an evaluation of how well students are mastering certain skills.

Course Student Learning Outcomes

At the conclusion of the course, the student will be able to:

1. Communicate clearly the steps to solve Calculus problems using the correct notation and terminology.
2. Demonstrate correct use of concepts of functions, limits, continuity, derivatives and integrals through manipulations.
3. Apply the methods of Calculus to optimization, graphing and approximation.
4. Apply differential and integral calculus to problems in geometry, physics and other fields.
5. Demonstrate methods for finding the anti-derivative through integration techniques and apply the Fundamental Theorem of Calculus when finding areas of bounded regions on a graph for continuous functions.

Learning Skills:

The Course Student Learning Outcomes are assessed using the following Learning Skills:

1. **Communicate clearly the steps to solve Calculus problems using the correct notation and terminology**
 - a) Use correct mathematical notation to communicate mathematical concepts that appear in calculus.
 - b) Be able to verbalize the steps needed to solve a problem.
 - c) Read and interpret graphs.

- 2. Demonstrate correct use of concepts of functions, limits, continuity, derivatives and integrals through manipulations**
 - a) Show an intuitive understanding of the concept of limit.
 - b) Determine the limit of a function and its continuity.
 - a) Perform the mechanics of differentiation on any combination of elementary functions.
 - c) Perform implicit and logarithmic differentiation.
 - d) Demonstrate an understanding of integration, both the antiderivative (indefinite integral) and definite integral.
 - e) Understand and use the fundamental theorem of calculus.
- 3. Apply the methods of Calculus to optimization, graphing and approximation**
 - a) Demonstrate understanding of the derivative as the rate of change of a function, in both analytical and graphical setting.
 - b) Apply first and second derivatives to graphing.
 - c) Apply derivatives to related rates, extrema, graphing.
 - d) Understand the graphs of a function and its 1st and 2nd derivatives and how they relate.
- 4. Apply differential and integral calculus to problems in geometry, physics and other fields**
 - a) Apply Newton's method.
 - b) Utilize the differential as an approximation to the finite change in a function.
 - c) Solve application problems involving velocity & acceleration, marginal rates or harmonic motion.
 - d) Apply derivatives and integrals to business applications and applications to growth and decay.
- 5. Demonstrate methods for finding the anti-derivative through integration techniques and apply the Fundamental Theorem of Calculus when finding areas of bounded regions on a graph for continuous functions**
 - a) Utilize the definite integral to calculate area and other applications.
 - b) Use the definite integral to find areas between curves.
 - c) Determine an antiderivative using integration by substitution.

UNM and UNM-Los Alamos Policies

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American Disabilities Act

In accordance with University Policy 2310 and the American Disabilities Act (ADA), academic accommodations may be made for any student who notifies the instructor of the need for an accommodation. It is imperative that you take the initiative to bring such needs to the instructor's attention, as the instructor is not legally permitted to inquire. Students who may require assistance in emergency evacuations should contact the instructor as to the most appropriate procedures to follow. Contact Accessibility Services at 505-661-4692 for additional information

Campus Closings and LoboAlerts

Class will be canceled if UNM-LA closes (e.g., in case of bad weather). Here are several ways to check for closing:

- Call the University switchboard at 505-662-5919 or 1-800-894-5919 and listen for a recorded announcement.
- Check your local TV and radio stations, or check local TV station web sites, e.g., <http://www.kob.com> (Channel 4), <http://www.krqe.com> (Channel 13) or <http://www.koat.com> (Channel 7). If UNM-Los Alamos is not specifically mentioned, the campus has not been closed.
- You can receive a text message about campus emergencies via LoboAlerts. Confirm that you are signed up to receive notifications on <http://loboalerts.unm.edu>.

UNM-LA Computer Account Policy

- **You are required to have a UNM campus account (NetID). You will use this account to access this course via Blackboard Learn.** You will also use this account to register for classes through MyUNM, <http://my.unm.edu>. This account is also used to read and send e-mail (the UNM email address looks like NetID@unm.edu), print transcripts, check financial status, and check degree progress. The NetID and password for Learn are the same as your login for your UNM Main Campus account.
- You are **required** to check your UNM email (LoboMail) periodically, as this is the main communication method used by the university. You may forward your LoboMail to another email address; however, this is not encouraged by UNM and not supported by UNM IT personnel.
https://unm.custhelp.com/app/answers/detail/a_id/6701/kw/forward%20lobomail .
- You can access your email via MyUNM by clicking on the “MyUNM” link on either the UNM–Los Alamos web page (<http://losalamos.unm.edu>) or the Main Campus web page (<http://www.unm.edu>), or by typing in the web address <http://my.unm.edu> . You must then log in using your NetID and password. Email is available on the UNM Email tab.
- You should be aware of the computer use policies as they affect your education at UNM-LA. See Computer Use Policy links on this page:
<http://losalamos.unm.edu/campus-life/computing-services/index.html> .

Technical and Academic Support

Students may contact the UNM-LA Academic Support Center for help or tutoring in their coursework. See the ASC website at <http://asc.unm.edu> . Any questions related to course organization or requirements should be directed to the instructor.

Technical support is available at these sources:

- Phone: (505) 277-5757 (M-F 8:00 am – 5:00 pm) – IT and WebCT support on main campus.
- UNM Fast Info: <http://fastinfo.unm.edu> (UNM searchable knowledge base)

UNM-LA IT support: go to http://www.la.unm.edu/administration/ITS/computer_services.html or email unmla-itsupport@unm.edu

Unexpected Class Cancellation

Due to difficulties in informing students in advance of a teacher’s illness or emergency, students who arrive for class and find the teacher isn’t there should wait 15 minutes (just in case he or she is simply late). After 15 minutes, students should go to building 1 to the front desk to seek information (Los Alamos) or to their corresponding on-site contact for other locations (provide). If there is no

information, students should assume that class has been canceled for the day and are free to leave. When possible, the instructor will call or email students to let them know of a canceled class meeting.

Dishonesty Policy Statement

Each student is expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, including dismissal, against any student who is found responsible for academic dishonesty. Any student who has been judged to have engaged in academic dishonesty in course work may receive a reduced or failing grade for the work in question and/or for the course.

Academic dishonesty includes, but is not limited to, dishonesty on quizzes, tests or assignments; claiming credit for work not done or done by others; and hindering the academic work of other students.

Course Policies

Evaluation Criteria/Grading

Evaluation of grades will be based on the following and weighted as indicated:

Remember, a grade is not “given,” it is reported based on your performance of required tasks.

- 6% online homework
- 6% written homework
- 6% attendance - calculated using daily attendance problems
- 20% exam 1
- 20% exam 2
- 20% exam 3
- 22% final exam

Homework

Note that homework is worth a total of 12% of your grade. If you choose not to do homework, your grade will end up a full letter below what you could have earned. I have much evidence as well that doing homework on time vastly increases the chances of doing well on the exams. Written homework answers will be posted. There is no excuse for not doing it.

Attendance Policy

Attendance is required. Note that attendance is graded and worth 6% of your class score. If you have to miss class, please let me know in advance. If you expect to miss a test, make arrangements for a different time, also in advance. You will likely not be given the same test if it is given after the rest of the class. If you miss a test, you will not automatically be given the opportunity to make it up. If you miss class, it is your responsibility to make up any missed work. You can likely get notes from a classmate.

Drop Policy

If students decide to drop the class, it is their responsibility to do so; they should be aware of University-wide posted deadlines for tuition refunds and mandatory assignment of grades. Students should not assume that the instructor will drop them before a deadline if they simply stop attending a live class or logging in to an online class.

Dropping a course may affect students' financial aid status and/or tuition refund. A drop will result in a W. Students who do not officially drop the class will receive the grade earned based on the syllabus grading criteria, which usually would be an F.

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Students are **required** to check their UNM email periodically, as this is the main communication method used by the university. Students may visit <http://it.unm.edu/howtos/504.html> for instructions on how to forward their UNM email to a different email address.

Students can access MyUNM by clicking on the “My UNM” link on either the UNM–Los Alamos web page (<http://www.la.unm.edu>) or the main campus web page

<http://www.unm.edu>), or by typing in the web address <http://my.unm.edu>. Students must then login using their NetID and password.

From the UNM-LA campus, students can access MyUNM from public computers, from computers in computer labs, and from computers in the library. If students wish to use their own computers, they can connect to one of the UNM-LA Wireless networks. Instructions for accessing these are given here: <http://www.la.unm.edu/Wireless/>.

Students should be aware of the computer use policies as they affect any aspect of their education at UNM-LA. See Computer Use Policy links on this page:

http://www.la.unm.edu/administration/ITS/computer_services.html .

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Course Outline/Assignments

We will tentatively cover the following sections on the given days. We will vary this as time permits. If we should get ahead or behind, this schedule will be modified.

Jan. 16, 18	1.1, 1.2, 1.3	Mar. 27, 29	4.1, 4.2, 4.3, 4.4
Jan. 23, 25	1.5, 1.6, 2.1	Apr. 3, 5	4.5, 4.6, 4.8
Jan. 30, Feb. 1	2.2, 2.3, 2.4	Apr. 10, 12	5.1, 5.2, 5.3
Feb. 6, 8	2.5, 2.6, review	Apr. 17, 19	5.4, 5.5, 5.6
Feb. 13, 15	exam 1, 3.1, 3.2	Apr. 24, 26	review, exam 3
Feb. 20, 22	3.3, 3.4, 3.5	May 1, 3	review for final
Feb. 27, Mar. 1	3.6, 3.7, 3.8	May 8	final exam (probable)
Mar. 6, 8	3.9, 3.10, 3.11		
Mar. 13, 15	Spring Break		
Mar. 20, 22	review, exam 2		

Written Homework

1.1	(3,21,27,51,75)	3.8	(15,25,39,51,63)
1.2	(5,13,17,23,53)	3.9	(7,11,15,23,33)
1.3	(3,9,17,43,59)	3.10	(11,23,25,31,33)
1.5	(5,13,23,31,35)	3.11	(19,29,41,51,57)
1.6	(13,31,43,53,71)	4.1	(23,33,41,49,57)
2.1	(1,3,7,21,23)	4.2	(3,9,27,49,51)
2.2	(1,15,25,37,61)	4.3	(3,27,33,47,57)
2.3	(7,9,15,31,37)	4.4	(11,21,31,41,49)
2.4	(3,5,7,25,27)	4.5	(3,9,27,41,61)
2.5	(7,23,27,45,57)	4.6	(7,9,11,15,45)
2.6	(1,9,13,19,29)	4.8	(11,37,47,61,65)
3.1	(5,11,19,25,31)	5.1	(3,11,13,15,17)
3.2	(1,5,7,13,23)	5.2	(13,25,31,37,45)
3.3	(3,11,15,23,51)	5.3	(7,9,17,51,59)
3.4	(3,9,13,23,27)	5.4	(7,29,47,55,59)
3.5	(1,7,33,37,51)	5.5	(5,21,31,39,59)
3.6	(5,13,35,51,71)	5.6	(11,23,31,69,79)
3.7	(3,23,33,39,45)		