

MATH 150: CALCULUS WITH ANALYTIC GEOMETRY I

SPRING SEMESTER, 2008; SYLLABUS DATE: 01/20/08
COURSE REFERENCE NUMBER (CRN): 92826
5.0 Units; Tues. and Thurs., 7:05-9:30pm in Room H-215 (Mesa)

INSTRUCTOR: Ken Kuniyuki

Email Address: kkuniyuk@yahoo.com (checked daily); there is no “i” before the “@”.

If that address doesn't work, try kkuniyuk@sdccd.edu (my official address).

Office Hours: M 4:50-5:50pm, T 6:00-7:00pm, W 3:50-5:50pm, Th 6:00-7:00pm
in Room H-212, Office F. You are encouraged to discuss any concerns with me.

Mailbox: H-207 (or H-212, which leads to the same room). There is a wooden cabinet consisting of cubbyholes.

Voice Mail: Office (checked MTWTh): (619) 388-2396. Otherwise: (619) 252-4839.

MY WEB SITE AT <http://www.kkuniyuk.com>

Ready access to the Internet and a printer will be assumed (and will prove very helpful), but the maximum number of course points can be earned without them. Computers and printers are available at the LRC (the Library), especially on the 4th floor. Let me know if you do not have access, or if you encounter errors. We can make hard (i.e., printed) copies of some items.

I expect to post homework assignments; class notes; review notes (bring to class!); old and current exams and solutions; class announcements; tentative schedules; tips on test taking and reducing test anxiety; campus events; and extra links, notes, info, and resources for interested students. I will try to help you form study groups.

TEXTS (SEE MY WEB SITE)

• Calculus: The Classic Edition (5th ed.) by Swokowski; Publisher: Brooks/Cole.
ISBN: 0-534-38212-6.

This has been the standard Math 150-151-252 calculus textbook at Mesa College.
Math 150 essentially covers Chapters 1-8. ON RESERVE AT THE LIBRARY.

Optional but highly recommended (the bookstore has the first two):

• The accompanying Student Solutions Manual by Cole and Rockswold. Only
Volume 1 is used for Math 150; Volume 2 is used for Math 151 and 252.
Volume 1 ISBN: 0-534-38273-8.

- How to Ace Calculus: The Streetwise Guide by Colin Adams, Joel Hass, and Abigail Thompson. Publisher: Freeman, 1998. This is a cheap, highly readable, fun, informal supplement. ISBN: 0-716-73160-6. How to Ace the Rest of Calculus is the sequel.
- Calculus for Dummies by Mark Ryan. Publisher: For Dummies, 2003. This is a concise overview of both Math 150 and 151.
- The Complete Idiot's Guide to Calculus by W. Michael Kelly. Publisher: Alpha, 2002.

You are encouraged to look at other calculus textbooks, such as:

- Calculus with Analytic Geometry by Larson, Hostetler, Edwards;
Publisher: Houghton Mifflin. Easy-to-read, but sometimes imprecise.
OLD 6TH EDITION ON RESERVE AT THE LIBRARY.
- Calculus: Early Transcendentals by Stewart;
Publisher: Wadsworth. Opinions of this book vary.
I believe the non-Early Transcendentals version is used at SDSU.
- Calculus and Analytic Geometry by Thomas/Finney;
Publisher: Addison-Wesley.

These paperbacks are much cheaper than textbooks, and they have many worked-out problems. "Advanced Calculus," "Differential Equations," "Vector Calculus/Analysis," "Discrete Mathematics" and "Linear Algebra" books in the first and third series listed are also available for your later math classes.

- Schaum's Outline of Calculus by Mendelson and Ayres;
Publisher: McGraw-Hill. It may have errors, and it omits Vector Calculus.
- 3,000 Solved Problems in Calculus (Schaum's Solved Problems Series)
by Mendelson; Publisher: McGraw-Hill. Also available: Linear Algebra.
- REA's Problem Solvers: Calculus, or The Calculus Problem Solver
by Weisbecker; Publisher: Research & Education Assn.

You can purchase these books at bookstores or through www.amazon.com or ebay, say. My web site has Amazon links. The LRC (our library) may have old editions.

PREREQUISITE

MATH 141 (Precalculus) with a grade of "C" or better, or equivalent.

COURSE DESCRIPTION

Catalog Description

This course is a primary introduction to university level calculus. The topics of study include analytic geometry, limits, differentiation and integration of algebraic and transcendental functions. Emphasis is placed on calculus applications. Analytical reading and problem solving are required for success in this course. This course is intended for the transfer student planning to major in mathematics, computer science, physics, chemistry, engineering, or economics. This course meets general education, CSU, IGETC, and TAG requirements.

COURSE OBJECTIVES

From the District's Course Outline (I may modify this.)

Upon successful completion of the course the student will be able to:

1. Evaluate various types of limits graphically, numerically, and algebraically, and analyze properties of functions applying limits including one-sided, two-sided, finite and infinite limits.
2. Develop a rigorous $\epsilon - \delta$ limit proof for simple polynomials.
3. Recognize and evaluate limits using the common limit theorems and properties.
4. Analyze the behavior of algebraic and transcendental functions by applying common continuity theorems, and investigate the continuity of such functions at a point, on an open or closed interval.
5. Calculate the derivative of a function using the limit definition.
6. Calculate the slope and the equation of the tangent line of a function at a given point.
7. Calculate derivatives using common differentiation theorems.
8. Calculate the derivative of a function implicitly.
9. Solve applications using related rates of change.
10. Apply differentials to make linear approximations and analyze propagated errors.
11. Apply derivatives to graph functions by calculating the critical points, the points of non-differentiability, the points of inflections, the vertical tangents, cusps or corners, and the extrema of a function.
12. Calculate where a function is increasing, or decreasing, concave up or concave down by applying its first and second derivatives respectively, and apply the First and Second Derivative Tests to calculate and identify the function's relative extrema.
13. Solve optimization problems using differentiation techniques.
14. Recognize and apply Rolle's Theorem and the Mean-Value Theorem where appropriate.
15. Apply Newton's method to find roots of functions.
16. Analyze motion of a particle along a straight line.
17. Calculate the anti-derivative of a wide class of functions, using substitution techniques when appropriate.
18. Apply appropriate approximation techniques to find areas under a curve using summation notation.
19. Calculate [Define] the definite integral using [the limit of a Riemann sum and] the Fundamental Theorem of Calculus and apply the Fundamental Theorem of Calculus to investigate a broad class of functions.
20. Apply integration in a variety of application problems, including areas between curves, arc lengths of a single variable function, volumes

ADDITIONAL HELP

Your fellow students! My web site may provide some help.

Students have found tutoring services to be a critical resource!

• **Math and Science Center** (Room K-211). Walk-in tutoring for Math and Science. Tentative Hours: MTWTh 10am-6pm, F closed. Phone: (619) 388-2898. Sign up for the 0-unit Credit / No Credit "course" Math 44. No extra work is required.

• **STAR Tutoring** (Building I-300, Room 101). One-on-one weekly tutoring for eligible students (low income, first generation college, or disabled). Tentative Hours: MTWThF 8am-5pm. Phone: (619) 388-2706. <http://www.sdmesa.edu/star>

Center for Independent Learning (Learning Resource Center, LRC - "The Library"; 4th floor). Videotapes may be available. Library Hours: MTWTh 7am-10pm, F 7am-5pm, Sat. 8am-3:30pm. Phone: (619) 388-2769.

Web sites! My web site has links that may prove helpful.

ACCOMMODATIONS; DSPTS

Students with disabilities or medical concerns who may need academic accommodations should notify their professors immediately. Check out the DSPTS web site at <http://www.sdmesa.edu/dsps> ... or visit the DSPTS Office in Room H-202; it could raise your GPA dramatically!! Phone: (619) 388-2780; for the hearing/speech impaired: (619) 388-2974. Hours: MTThF 7:50am-4:30pm, W 7:50am-7pm.

DSPTS students should give me test proctoring forms at least one week before they take the corresponding exams; I need to take them home to fill them out properly.

If you expect to be involved in professional or college activities (e.g., military duty or athletics) that may, for example, hinder your ability to attend class, submit homework, and/or take exams, let me know as soon as possible so that accommodations may be made.

DEADLINES (SEE THE "VERY TENTATIVE SCHEDULE")

Dropping without a "W"; add codes (*)	Fri.	Feb. 8	Week 2
Refund eligibility for dropped classes	Mon.	Feb. 11	Week 3
Credit / No Credit petition	Mon.	Mar. 3	Week 6
Withdrawal deadline (**)	Fri.	Apr. 11	Week 10 (excluding Spr. Break)

Grades available online: **June 2, 2008**; (<http://studentweb.sdccd.edu>)

(*) Tuition and fees must be paid within five days of adding a course, or by Feb. 8, whichever comes first.

(**) If you do not withdraw from the class by this deadline, I must give you a standard A-F grade.

GRADES / EXAMS

Cheating is, of course, forbidden. Possible penalties include assigned scores of “0,” a course grade of “F,” and action by the school dean. Refer to Policy 3100 in the Mesa College catalog. Collaboration outside of class is encouraged, but copying is forbidden, and any attempts to compromise exam security will not be tolerated.

Bring a scientific calculator to all exams on which calculators are allowed. Graphing calculators may be forbidden or their use curtailed; grade reductions may result from their use. (See COME TO CLASS WITH / CALCULATOR INFO.)

Do not expect to be able to make up exams. Even if the instructor allows a student to take a makeup exam, there are no guarantees; for example, the exam may be heavily penalized or not graded or returned at all. If you are a “borderline” grade case, makeups may hurt. Exam time may be shortened. Testing conditions may be very poor. A student must inform the instructor **as soon as possible** if accommodations need to be made.

Points may be deducted for messy work, lateness, failure to adhere to “good form and procedure” as presented in class, and the like!

Your course score will be out of 1000 points (1000 points = “100%”), divided as follows:

QUIZZES: 600 points (which is 60% of 1000 points)

-- 6 quizzes given, each worth 100 points

Quiz on Chapters 1 and 2
Quiz on Chapter 3
Quiz on Chapter 4
Quiz on Chapter 5
Quiz on Chapter 6
Quiz on Chapter 7
(Chapter 8 is fair for the Final.)

The quizzes are “closed book” and “closed notes,” but a scientific calculator may be allowed. (See COME TO CLASS WITH / CALCULATOR INFO.)

HOMEWORK (“HW”): 90 points (9%)

-- 15 points for each of 6 submissions, plus 10-point extra credit assignment (Ch.8)

Homework for Chapters 1 and 2
Homework for Chapter 3
Homework for Chapter 4
Homework for Chapter 5
Homework for Chapter 6
Homework for Chapter 7
Homework for Chapter 8 (10 points extra credit)

Although you are strongly encouraged to do problems as soon as you can, homework will typically be **collected on the day of the corresponding exam**, unless the due date is explicitly postponed.

Make sure you clearly separate sections on your homework! Write your first name, last name, and "Math 150" on either a title page or on the upper right corner of the first page. Contact me if you want to encode your name for privacy purposes.

Failure to do homework in a timely manner can wreck your grade in this class - in terms of both points and exam preparation!

Answers to odd-numbered problems are in the back of the textbook. Many "worked-out" solutions are in the Student Solutions Manual. Use the Student Solutions Manual wisely.

On your homework, **show work where appropriate**. Points may be deducted from homework assignments that are turned in late, that are incomplete or illegible or messy, that are plagiarized, or that have insufficient work.

CLASS PARTICIPATION: 60 points (6%)

This involves class attendance and promptness, disruptive behavior, and/or participation in office hours (and other forms of communication) and in-class activities and exercises. Class participation may be a key factor in determining grade "borderline" cases.

FINAL: 250 points (25%)

This is an essentially **comprehensive** exam that will be given **during the last class session, on Thurs., May 22, in our regular room.**

You will be allowed to use one 8 1/2" by 11" sheet of notes on part of the Final; no notes will be allowed on the other part of the Final (this other part may test you on derivatives, integrals, trig and hyperbolic identities and formulas, and inverse trig functions). You may use both sides of the sheet. Students with vision impairments should speak with me. The sheet must be two-dimensional - no "pull-outs" or other tricks! Typing and photocopying are fine, though writing by hand is recommended. You should stress organization over clutter. Work on this throughout the semester. **An outline of topics is available on my web site; copies may also be obtained during my office hours.**

Bring a scientific calculator in case one is allowed. (See COME TO CLASS WITH / CALCULATOR INFO.)

The following are guarantees:

<u>Course score out of 1000</u>	<u>Grade guarantee</u>
At least 900 (90%)	A
At least 800 (80%)	B or better
At least 700 (70%)	C or better
At least 600 (60%)	D or better

In other words, I do not reverse curve. The grade cutoffs may be lowered. Percents might not be rounded up! Class participation could be critical here. The course may be taken on a Credit / No Credit basis, but check your program requirements, first. The petition deadline is Mon., Mar. 3 (Week 6).

COME TO CLASS WITH / CALCULATOR INFO:

- The appropriate textbook(s), at least on days when I will answer your HW questions
- The review notes when we are ready to review, if you can print them out
- You may want to print out other course notes, as well, before or after a lecture.
- **A scientific (not graphing) calculator - you will need one for the course.
Graphing calculators may be forbidden on exams.**

Some sections at City, Mesa, and Miramar (and at Cuyamaca and Grossmont) are more graphing calculator-based; check the online schedule.

Many modern scientific calculator models operate like graphing calculators as far as WYSIWYG (What You See Is What You Get) entry goes. For example, the Sharp EL733A is a good business calculator; the HP 30S has a large display; and the TI-30X IIS can also be good, though it relies on menus – I can help you with them.

- Some paper and a pencil or pen: for note taking and in-class exercises
- Homework (on exam dates; keep yourself updated on changes to our schedule!!)

Ø KIDS IN THE CLASSROOM

Children are forbidden in the classroom. Check with the Child Development Center in Building R. Phone: (619) 388-2812. Hours: MTWTh 7:45am-4:25pm, F 7:45am-12:45pm. Web site: <http://www.sdmesa.edu/7student-services/support/cdc/cdc.html>

ATTENDANCE

Students who are absent for the equivalent of two or more class meetings or roll calls may be dropped from the course; refer to the Mesa College catalog. Students who miss the first day of class may also be dropped. **It is VERY important for you to be in class throughout the entirety of the scheduled time. I consider tardiness and premature departures as forms of absences, particularly if habitual; many students are distracted by such behavior. Your attendance and tardiness record may also affect your grade. You must inform me of reasons for absences (including medical priorities and the like) as soon as possible.**

CLASSROOM BEHAVIOR AND STUDENT CODE OF CONDUCT:

Students are expected to respect and obey standards of student conduct while in class and on the campus. The student Code of Conduct, disciplinary procedure, and student due process (Policy 3100, 3100.1 and 3100.2) can be found in the current college catalog in the section Academic Information and Regulations, and at the office of the Dean of Student Affairs (H-500). Charges of misconduct and disciplinary sanctions may be imposed upon students who violate these standards of conduct or provisions of college regulations.

Disruptive behavior will not be tolerated; disruptive students may be removed from the class and are especially likely to be dropped from the course. Disruptive behavior includes, among other things, inappropriate talking, eating or drinking in class, tardiness, and premature departures. Your grade may be affected. Discuss personal scheduling issues with the instructor. Refer to Policy 3100 in the Mesa College catalog.

REMEMBER TO TURN OFF YOUR CELL PHONE!!!

RESPONSIBILITY TO ADD, DROP, OR WITHDRAW

It is the student's responsibility to add, drop, or withdraw from class before the deadlines stated in the class schedule. Petitions to add, drop, or withdraw after the deadline will not be approved without proof of circumstances beyond the student's control which made him/her unable to meet the deadline. Lack of money to pay fees is not considered an extenuating circumstance. Students anticipating difficulty in paying fees before the add deadline should check with the Financial Aid Office about sources of funds or other alternatives for which they may be eligible.

If you decide to withdraw from this course, you are reminded to do so by Fri., Apr. 11. If you fail to withdraw by that date and you stop coming to class, a final grade must be assigned to you. Those attending after the withdrawal deadline will be given a letter grade.

The instructor may drop students for extended absences, especially close to the "W" deadline. Keep me informed of your status if you miss several roll calls in a row!

Please discuss your plans to withdraw from class with your instructors. They may have other options for you that may allow you to continue in class.

INSTRUCTOR ABSENCE (DISTRICT POLICY)

If neither the instructor nor a substitute appears at the beginning of the scheduled class time, students shall wait 20 minutes; if neither the instructor nor a substitute appears within those 20 minutes, students may leave the classroom.

NOTES / CLASS CONTACTS (SEE MY WEB SITE, ALSO)

VERY TENTATIVE SCHEDULE (VERSION 1)

(May be changed arbitrarily; keep checking my web site!)

HW = Homework (and other) questions.

(See me in my office hours, email me, or call me whenever you have questions.)

Week (Holidays / Deadlines)	TUESDAY	THURSDAY
1	1/29 (Day 1) Hello / 1.1 / 1.2 / 1.3	1/31 (Day 2) 1.3 / 2.1
2 Avoid W; Add codes (Fri., 2/8)	2/5 (Day 3) 2.2 / 2.3	2/7 (Day 4) 2.3
3 Refund deadline (Mon., 2/11) Holidays (Fri., 2/15 – Mon., 2/18)	2/12 (Day 5) 2.4 / 2.5	2/14 (Day 6) 2.5 / 3.1
4 Holidays (Fri., 2/15 – Mon., 2/18)	2/19 (Day 7) 3.2 / HW	2/21 (Day 8) QUIZ CHS. 1,2 / 3.3
5	2/26 (Day 9) 3.4 / 3.5	2/28 (Day 10) 3.6 / 3.7
6 C/NC petition (Mon., 3/3)	3/4 (Day 11) 3.7 / 3.8	3/6 (Day 12) 3.8 / 4.1
7	3/11 (Day 13) 4.1 / 4.2 / HW	3/13 (Day 14) QUIZ CH.3 / 4.3
(Don't count)	3/18 SPRING BREAK	3/20 SPRING BREAK
8	3/25 (Day 15) 4.3 / 4.4	3/27 (Day 16) 4.4 / 4.5
9	4/1 (Day 17) 4.6 / 4.7	4/3 (Day 18) 4.8 / 5.1
10 W deadline (Fri., 4/11)	4/8 (Day 19) 5.1 / 5.2 / HW	4/10 (Day 20) QUIZ CH.4 / 5.4 and 5.3
11	4/15 (Day 21) 5.4 and 5.3 / 5.5 / 5.6	4/17 (Day 22) 5.6 / 5.7
12	4/22 (Day 23) 6.1 / 6.2 / HW	4/24 (Day 24) QUIZ CH.5 / 6.2
13	4/29 (Day 25) 6.2 / 6.3 / 6.4	5/1 (Day 26) 6.5 / 7.1 / 7.2
14	5/6 (Day 27) 7.2 / 7.3 / HW	5/8 (Day 28) QUIZ CH.6 / 7.4
15	5/13 (Day 29) 7.5 / 8.1 / 8.2	5/15 (Day 30) 8.3 / HW
16 Semester ends Sat., 5/24	5/20 (Day 31) QUIZ CH.7 / HW	5/22 (Day 32) FINAL

Grades available online: **June 2, 2008**; (<http://studentweb.sdccd.edu>)