

MATH 150: CALCULUS WITH ANALYTIC GEOMETRY I

SPRING SEMESTER, 2017 (1/30/17-5/27/17); SYLLABUS DATE: 1/20/2017

COURSE REFERENCE NUMBER (CRN): 04935

5.0 Units; Mon. and Wed., 6:00-8:30pm in Room MS418 (Mesa)

INSTRUCTOR: Ken Kuniyuki

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

Official address: kkuniyuk@sdccd.edu (esp. for things like applications).

- I usually check my email at least once a day and my voice mail MTWTh.
- When asking about HW, please let me know what you are thinking about the problem, so I know where to start addressing your question. Please go beyond: “How do you do this problem?” If you do that, I may just give a hint!

Office Voice Mail: (619) 388-2396, checked MTWTh. (Long messages may be cut!)

Office Hours: MTWTh 4:30-5:45pm in MS215-P.

MY WEBSITE AT <http://www.kkuniyuk.com> (or google “precalculus notes”)

- 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), see the 1st and 4th floors. Let me know if you do not have access, or if you encounter errors. Printed copies may be available.
- I expect to post **homework** assignments and answers (provided in-class and online); **class notes; exam outlines; 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**.

THERE IS NO REQUIRED TEXTBOOK. NOTES ARE ONLINE. HW PROVIDED.

- I will not lecture on the **Ch.1** review material in class, though you will need it for HW and exams, so you will need to access it somehow.
- Many people **bring tablets** OR **print the online lecture notes** (in color?) before class, preferably two-pages-to-a-side, double-sided. Try rescaling.
- **Homework (HW)** assignments and answers will be provided in-class and also online.
- **My website** has Amazon links to other books and videos. Check ebay.com. The LRC (our library) may have old editions. The **Schaum’s Outline** paperbacks are much cheaper than textbooks, and they have many worked-out problems.

§ “EARLY” NOTES THROUGH SECTION 3.6:

- The **bookstore** has **black-and-white, small-print** (two-pages-to-a-side), shrink-wrapped, three-hole punched copies of these **early notes**.

§ THE REMAINING (MOSTLY HANDWRITTEN) NOTES ARE ONLY ONLINE.

- Some people purchase a textbook (see below). This could be a cheap, old edition for personal use, or you could get a book that you think you may use for Math 151.

OPTIONAL TEXTBOOKS (SEE MY WEBSITE)

- Instructors use books by Swokowski, Larson, Stewart, Thomas, etc.
- Calculus: The Classic Edition (5th ed.) by **Swokowski**; Publisher: Cengage. There's a Student's Solutions Manual.

Mesa used to use this. Math 150 essentially covers Chapters 1-8. ON RESERVE AT THE LIBRARY. My notes are organized like this book, starting with Ch.3.

Cheap, readable paperback guides:

How to Ace Calculus: The Streetwise Guide (AT THE BOOKSTORE),
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, Mark Ryan. Publisher: For Dummies, 2003.

This is a concise overview of both Math 150 and 151.

The Complete Idiot's Guide to Calculus, W. Michael Kelly. 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.

These cheap paperbacks have many **worked-out problems**.

- 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.com, say. My website 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 (IN CATALOG)

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. Associate Degree Credit & transfer to CSU. UC Transfer Course List. MATH 121 and 150 combined: maximum credit, one course.

STUDENT LEARNING OUTCOMES (MATH 150 COURSE)

- #1 - Evaluate a definite integral by using a u substitution with a non-polynomial algebraic integrand. Use correct form and notation.
- #2 - Students will come prepared with the appropriate prerequisite skills.
- #3 - Students demonstrate a knowledge of the connection between a derivative and an integral.

STUDENT LEARNING OUTCOMES (DEPARTMENTAL / MATH)

"Students who complete the Mathematics program will be able to....."

- 1) Mathematical problem solving: Apply appropriate mathematical definitions, properties, and techniques in a variety of problem solving situations and recognize an appropriate solution as opposed to an unreasonable or extraneous one.

- 2) Interrelatedness of concepts: Demonstrate knowledge of the interrelatedness of the concepts within a particular course and/or among different courses.
- 3) Communication and reasoning: Demonstrate the ability to communicate mathematical reasoning in the context of solving a problem with clarity and detail.
- 4) Tools and technology: Choose and apply appropriate tools and technology to various problems.

STUDENT LEARNING OBJECTIVES

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 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, arclengths of a single variable function, and volumes.
21. Estimate the value of a definite integral using standard numerical integration techniques which may include the Left-Endpoint Rule, the Right-Endpoint Rule, the Midpoint Rule, the Trapezoidal Rule, or Simpson's Rule.
22. Calculate derivatives of inverse trigonometric functions, hyperbolic functions [and inverse hyperbolic functions?].
23. Calculate integrals of hyperbolic functions, and of functions whose anti-derivatives give inverse trigonometric [and inverse hyperbolic functions?].

ACCOMMODATIONS; DSPTS

o Students with disabilities who may need academic accommodations are encouraged to discuss their authorized accommodations from Disability Support Programs and Services (DSPTS) with their professors early in the semester so that accommodations may be implemented as soon as possible.

o The faculty member will work with the DSPTS Office to ensure that proper accommodations are made for each student. By law, it is up to the DSPTS Office to determine which appropriate accommodations are, not the student or the faculty.

o Students that need evacuation assistance during campus emergencies should also meet with the instructor as soon as possible to assure the health and safety of all students.

• Students with disabilities or medical concerns who may need academic accommodations should notify their professors immediately. See the DSPTS website at www.sdmesa.edu/dsps or go to the 4th floor of the new Student Services Building; it could raise your GPA dramatically!! Phone: (619) 388-2780; for the hearing/speech impaired: (619) 388-2974; fax: (619) 388-2460. (See website, DSPTS.)

• Give me test proctoring forms for DSPTS **at least one week** before taking a test.

• If you are 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.

ADDITIONAL HELP

Websites! My website has links that may prove helpful.

Your fellow students! My website may provide some help.

Students have found tutoring services to be a critical resource!

- **Mesa Tutoring and Computing Centers (MT2C): Math & Science Tutoring and Computing** (4th floor of the LRC / Library). Walk-in tutoring, group study rooms, computers. Possible Hours: MTWTh 9am-8pm, Fri. and Sat. 9am-2pm. www.sdmesa.edu/tutoring
- **Math workshops.** Check the monitors in our building and my website.
- **STAR/TRIO Tutoring** (Room I4-308, on the 3rd floor of the new Student Services Building). One-on-one weekly tutoring for eligible students (low-income, first-generation college, or disabled). Phone: (619) 388-2481. Email: startrio@sdccd.edu. Web: www.sdmesa.edu/star

DEADLINES (SEE THE “VERY TENTATIVE SCHEDULE” AT THE END)

Dropping without a "W"; add codes (*)	Fri.	Feb. 10	Week 2
Refund eligibility for dropped classes	Fri.	Feb. 10	Week 2
Pass / No Pass petition	Mon.	Mar. 6	Week 6
Withdrawal deadline (**)	Fri.	Apr. 14	Week 10

Grades available online: (<http://studentweb.sdccd.edu>)

(*) Tuition and fees must be paid within two (?) days of adding a course, or by this deadline, whichever comes first.

(**) If you do not withdraw from the class by this deadline, I must give you an evaluative grade (like A-F, Pass / No Pass).

GRADES / EXAMS

- Bring a **scientific calculator** to all exams on which calculators are allowed. **Graphing calculators and cell phones will be forbidden**; grade reductions may result from their use. (See **COME TO CLASS WITH / CALCULATOR INFO.**)
- **There are no guarantees regarding makeup exams.** Even if one is allowed, you may get less time for a harder exam, and it might not be returned; also, it may hurt if you end up at a “borderline” grade. **Testing conditions may be very poor.** You must inform me **as soon as possible** if accommodations are necessary. **Promptly inform me if there is a problem taking an exam; do not expect do-overs of exams to be allowed.**
- **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 pts. = "100%"), divided as such:**

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

-- 6 quizzes given, each worth 100 points (105 points maximum)

QUIZ	IN MY NOTES, SWOKOWSKI 5 ^{ed}	IN BRIGGS 2 ^{ed}
Quiz 1	Ch.1 and Ch.2	Ch.1 and Ch.2
Quiz 2	Ch.3	Ch.3 and 4.5
Quiz 3	Ch.4	Ch.4, not 4.7, do 4.9 later
Quiz 4	Ch.5	4.9 and Ch.5 and 6.1
Quiz 5	Ch.6	Ch.6, not 6.7
Quiz 6	Ch.7	Ch.7: 7.1-7.4
(Final)	All; Ch.8 also fair	All; 7.5 and 7.7 also fair

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)

- 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.
- **Turn in HW on time. Expect late HW to be penalized**; the last HWs must be turned in on time. Expect late HW to lose about two points for being one session late, four points for two sessions, and all points after that.
- **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 to encode your name for privacy.
- **Do not turn in a thick, bulky binder.** I collect many HWs, and the HW might not be returned to you for a while.
- 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.
- **The HW is meant to help you learn and study for exams. Feel free to mark it up!** For grading, it will be scanned for completeness and overall integrity.
- **Failure to do homework in a timely manner can wreck your grade in this class - in terms of both points and exam preparation!**

CLASS PARTICIPATION and ATTENDANCE: 60 points (6%)

- This involves class attendance and promptness, disruptive behavior, and/or participation in office hours / tutoring (and other forms of communication) and in-class activities and exercises. **Inform me of any reasons for any absences.**
- The final grade in this class will be affected by active participation, including attendance, as follows: **Students who engage in idle talking and other disruptive behaviors can lose up to 15 points here. Everyone else will get the full 60 points**, but this is a reminder that I use class participation as a **key factor in determining grade “borderline” cases. Many students have their grades influenced by their participation records. Good attendance can be rewarded.**
- **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) ASAP.
- Students who miss the first two weeks of class will be dropped.
- Students who miss three sessions may be dropped.

FINAL: 250 points (25%)

- This is an essentially **comprehensive** two-part exam that will be given **during the last class session, on Wed., May 24, 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.** You may use **both sides** of the sheet. Students with vision impairments and the like should contact 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 on my website; this is also a “Day 1” handout.**

• **Bring a scientific calculator in case one is allowed for part of the Final. (See COME TO CLASS WITH / CALCULATOR INFO.)**

The following are guarantees:

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

I do not reverse curve. The grade cutoffs may be lowered.

Percents might not be rounded up! **Class participation will be critical here.**

The course may be taken on a Pass / No Pass basis, but check your program requirements, first. The petition deadline is Mon., Mar. 6 (Week 6).

ZERO TOLERANCE FOR CHEATING!!

- **I have given ‘0’s on tests due to cheating – it can devastate your grade and your ability to enroll as a student!**
- **Cheating is easier to detect than students think! I grade problem-by-problem and often compare student work. Exams may be photocopied at any time.**
- Possible penalties include assigned scores of “0” 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.

Students are expected to be honest and ethical at all times in the pursuit of academic goals. Students who are found to be in violation of Administrative Procedure 3100.3 Honest Academic Conduct, will receive a grade of zero on the assignment, quiz, or exam in question and may be referred for disciplinary action in accordance with Administrative Procedure 3100.2, Student Disciplinary Procedures.

ZERO TOLERANCE FOR IDLE TALKING AND OTHER DISRUPTIONS!!

- Students can **lose up to 15 class participation points** in their total course score. Deductions may be determined at the end of the semester.
- ‘Borderline’ grade cases **might not be moved up.**
- **Quick**, appropriate assistance to a neighbor is permitted, BUT MAKE SURE IT’S QUICK!! Mostly, you should TALK TO ME!
- Many students are distracted by **WHISPERING!** The holes in the ceiling carry noise very effectively.
- **REMEMBER TO TURN OFF YOUR CELL PHONE!!! DURING EXAMS, I WILL MONITOR CELL PHONE PLACEMENT. BEFORE ANY BATHROOM BREAK, YOU MUST CHECK IN WITH ME; LEAVE BEHIND YOUR CELL PHONE AND EXAM; EXAMS ARE SUBJECT TO PHOTOGRAPHING. VIOLATIONS MAY RESULT IN ‘0’ SCORES!**

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.

COME TO CLASS WITH / CALCULATOR INFO:

- You may want to bring the **online notes**, maybe on a **tablet**.
- Copies of **homework** assignments and answers (provided in-class and online)
 - We may discuss the homework during part of the session preceding the exam.
 - We may have time to discuss homework after class.
 - The homework is due on exam dates; keep checking our schedule online.
- The review notes when we are ready to review, if you can print them out
- **A scientific (not graphing) calculator - you will need one for the course.**
 - Graphing calculators and cell phones will 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 scientific calculators are like graphing calculators as far as WYSIWYG (What You See Is What You Get) entry goes. The Sharp EL733A is a good business calculator; the HP 30S has a large display; and the TI-30X IIS (which I have and which I can help you with) can also be good, though it relies on menus.
- Some paper and a pencil or pen: for note-taking and in-class exercises

NO CHILDREN IN THE CLASSROOM

Check with the Child Development Center in Building R. Phone: (619) 388-2812.

RESPONSIBILITY TO ADD, DROP, OR WITHDRAW

It is the student's responsibility to drop all classes in which he/she is no longer attending. Students who remain enrolled in a class beyond the published withdrawal deadline, as stated in the class schedule, will receive an evaluative letter grade in this class. If you decide to withdraw from this course, you are reminded to do so by Fri., Apr. 14. It is the instructor's discretion to withdraw a student after the add/drop deadline (Fri., Feb. 10) due to excessive absences (three or more in this class). Keep me informed of your status if you miss several roll calls in a row!

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. **Expect "late" adds, drops, and withdrawals to no longer be accepted.**

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.

DO YOU NEED THIS CLASS?

Make sure that you check www.assist.org to see that your major requirements for transfer have not changed.

NOTES / CLASS CONTACTS (SEE MY WEBSITE, ALSO)

MATH 150 VERY TENTATIVE SCHEDULE (version 1)

(May be changed arbitrarily; keep checking my website!)

HW = Homework (and other) questions. Homework is typically due on test dates.

Week (Holidays / Deadlines)	MONDAY	WEDNESDAY
1	1/30 (Day 1) Hello / Ch.1 (you review) / 2.1	2/1 (Day 2) 2.2 / start 2.3
2 Avoid "W"; Adds / refunds (Fri., 2/10)	2/6 (Day 3) finish 2.3 / 2.4	2/8 (Day 4) 2.5 / 2.6
3 Holiday (Fri., 2/17 to Mon., 2/20)	2/13 (Day 5) 2.7 / 2.8	2/15 (Day 6) 3.1 / HW (discuss it)
4 Holiday (Fri., 2/17 to Mon., 2/20)	2/20 NO CLASS	2/22 (Day 7) QUIZ CHS.1,2 / start 3.2
5	2/27 (Day 8) finish 3.2 / 3.3	3/1 (Day 9) 3.4 / 3.5
6 Pass / No Pass deadline (Mon., 3/6)	3/6 (Day 10) 3.6 / 3.7	3/8 (Day 11) 3.8
7	3/13 (Day 12) start 4.1 / HW	3/15 (Day 13) QUIZ CH.3 / fin 4.1
8	3/20 (Day 14) 4.2 / 4.3	3/22 (Day 15) 4.4 / 4.5
No classes this week!	NO CLASS	NO CLASS
9	4/3 (Day 16) 4.6 / 4.7	4/5 (Day 17) 4.8 / start 5.1
10 "W" deadline (Fri., 4/14)	4/10 (Day 18) finish 5.1 / HW	4/12 (Day 19) QUIZ CH.4/start 5.2
11	4/17 (Day 20) fin 5.2 / 5.3 and 5.4	4/19 (Day 21) 5.5 / 5.6
12	4/24 (Day 22) 5.7 / 6.1	4/26 (Day 23) start 6.2 / HW
13	5/1 (Day 24) QUIZ CH.5 / fin 6.2	5/3 (Day 25) 6.3 / 6.4 / 6.5
14	5/8 (Day 26) 7.1 / start 7.2 / HW	5/10 (Day 27) QUIZ CH.6 / finish 7.2 / start 7.3
15	5/15 (Day 28) finish 7.3 / 7.4 / 7.5	5/17 (Day 29) 8.1 / 8.2 / (skim 8.3) / HW
16 Semester ends Sat., 5/27	5/22 (Day 30) QUIZ CH.7 / 8.3 / HW	5/24 (Day 31) FINAL

Grades available online: (<http://studentweb.sdccd.edu>)

MATH 150: Calculus w/Analytic Geometry I; CRN 04935; MW 6:00-8:30pm, MS418/Mesa Ken Kuniyuki; kkuniyuk@yahoo.com or kkuniyuk@sdccd.edu (official); (619) 388-2396 MTWTh 4:30-5:45pm in MS215-P. 5 units.

Website (with complete syllabus): www.kkuniyuk.com or google "Precalculus Notes"