

MATH 141: PRECALCULUS

SPRING SEMESTER, 2012; SYLLABUS DATE: 1/10/12
COURSE REFERENCE NUMBER (CRN): 47237
5.0 Units; Tues. and Thurs., 7:05-9:30pm in Room K-204 (Mesa)

INSTRUCTOR: Ken Kuniyuki

Email Address: kkuniyuk@yahoo.com; there is no “i” before the “@.”
My official address is: kkuniyuk@sdccd.edu (esp. for things like applications).

- I usually check my email at least twice 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.
Warning: Long messages might get cut off or deleted from the system!

Office Hours: M 4:50-5:50pm, T 6-7pm, W 3:50-5:50pm, Th 6-7pm (see poster online)
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; mine still has my name labels. Technically, K-108B is my “official” mailroom, but it is locked, and students leave messages at K-203.

MY WEB SITE AT <http://www.kkuniyuk.com> (or google my name)

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 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.

My in-class lectures will be based on the **notes provided online**. Many people print the notes before class, preferably two-pages-to-a-side, double-sided (sometimes, something like 110% scaling for larger print can help; other times, text gets cut off, though).

Homework (HW) assignments and answers will be provided in class, and they will also be posted online.

I used to use the **Larson** Precalculus text. The notes from Chapter 2 on basically follow Larson's order of topics. **Old editions** are sold at very cheap prices on ebay.com and amazon.com.

My web site 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.

PREREQUISITE

MATH 104 (Trigonometry) with a grade of "C" or better, or equivalent.

COURSE DESCRIPTION (FROM COLLEGE CATALOG)

Catalog Description

This course is a study of numerical, analytical, and graphical properties of functions. The course content includes polynomial, rational, irrational, exponential, logarithmic, and trigonometric functions. Additional topics include: inverse functions, complex numbers, polar coordinates, matrices, conic sections, sequences, series and the binomial theorem. This course is designed as a preparation for calculus and is intended for the transfer student planning to major in mathematics, engineering, economics, or disciplines included in the physical or life sciences. (FT). UC Transfer Course List. Associate Degree Credit & transfer to CSU and/or private colleges and universities. City, Mesa, Miramar- MATH 116 and 141 combined: maximum credit, one course. CAN MATH 16 = MATH 141 (City, Mesa, Miramar).

STUDENT LEARNING OUTCOMES

Student Learning Outcomes for the math dept.:

“Students who complete the Mathematics program will be able to.....”

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

Student Learning Objectives from the District’s Course Outline (I may modify this):

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

1. Define and distinguish between higher order polynomial functions and non-polynomial functions and relations, and analyze the graphs of functions by determining their domains and ranges.
2. Analyze properties of functions and their graphs, including symmetries, increasing and decreasing intervals and their end behavior asymptotes.
3. Prove algebraically and justify graphically when a function is one-to-one.
4. Graph a variety of algebraic, rational, exponential, logarithmic, and trigonometric functions, and where applicable, use rigid and non-rigid transformations, intercepts and asymptotes.
5. Perform algebraic operations on various functions including composition of functions, and determine the domain of the resulting function.
6. Calculate the inverse of a one-to-one function, determine the domain and range of the inverse and describe the relation between their graphs.
7. Solve equations and application problems involving exponential and logarithmic functions.
8. Simplify difference quotients involving a variety of functions including polynomial, rational, trigonometric, exponential, and logarithmic functions.
9. Apply a variety of root finding theorems and tests in order to factor polynomials or solve polynomial equations whose degree is higher than quadratic.
10. Simplify rational expressions and expressions involving radicals that arise from calculus operations, such as those from the product or quotient rules.
11. Determine the partial fraction decomposition of rational functions.
12. Define, evaluate, describe and graph all trigonometric and inverse trigonometric functions, and solve equations involving these functions.
13. Derive and prove fundamental trigonometric identities including the sum, difference, double and half angle identities.
14. Apply the laws of sines and cosines in solving oblique triangles and in application problems.
15. Represent complex numbers in standard, trigonometric and exponential forms and perform arithmetic operations with each.
16. Perform algebraic operations involving matrices.
17. Apply matrices in solving linear systems of equations.
18. Compute the determinant of a square matrix, and apply determinants to various applications.
19. Apply vector algebra to problems involving vector quantities.
20. Perform the vector operations of the dot product and the cross product, and formulate their geometric interpretations.
21. Analyze, identify, and graph the four conic sections.
22. Solve systems of non-linear equations [and inequalities], including those involving conic sections.
23. Define and analyze sequences and series, including arithmetic and geometric sequences and series, find the sum of finite and infinite geometric series.
24. Apply the binomial theorem to expand powers of binomial expressions.
25. Prove elementary mathematical statements using the principle of Mathematical Induction.

ACCOMMODATIONS; DSPS

Students with disabilities or medical concerns who may need academic accommodations should notify their professors immediately. Check out the DSPS web site at <http://www.sdmesa.edu/dsps> ... or visit the DSPS Office in I3-101, on the first floor of the I-300 building (it is expected to move to the Student Services Building in 2012 when it is completed); it could raise your GPA dramatically!! Phone: (619) 388-2780; for the hearing/speech impaired: (619) 388-2974. Hours: Check their web site and their office; tentatively, M-Th 8-4:30 and F 8-12.

DSPS students should give me test proctoring forms **at least one week** before they take the corresponding exams. I may need to take them home or fill them out in my office.

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.

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 I-207(M)). Walk-in tutoring. Hours to be determined. Hours from Fall 2011 were: MTWTh 10am-6pm. Phone: (619) 388-2898. <http://www.sdmesa.edu/math-science-center>

- **STAR Tutoring** (I3-201, on the second floor of the I-300 building; this may change). One-on-one weekly tutoring for eligible students (low income, first generation college, or disabled). Tentative Hours: MTWTh 8am-5pm and F 8am-12 noon. Phone: (619) 388-2706. <http://www.sdmesa.edu/star>

Center for Independent Learning (Learning Resource Center, LRC - "The Library"; 4th floor). Videotapes and DVDs may be available. Library Hours: MTWTh 7am-10pm, F 7am-5pm. Closed: Sat., Sun., holidays. Phone: (619) 388-2769. <http://www.sdmesa.edu/cil>. Library: (619) 388-2695.

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

DEADLINES (SEE THE "VERY TENTATIVE SCHEDULE")

Dropping without a "W"; add codes (*)	Fri.	Feb. 3	Week 2
Refund eligibility for dropped classes	Mon.	Feb. 6	Week 3
Pass / No Pass petition	Mon.	Feb. 27	Week 6
Withdrawal deadline (**)	Fri.	Mar. 30	Week 10

Grades available online: Starting **Tues., May 29, 2012**; (<http://studentweb.sdccd.edu>)

(*) Tuition and fees must be paid within two (?) days of adding a course, or by Feb. 3, whichever comes first.

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

GRADES / EXAMS

Bring a **scientific calculator** to all exams on which calculators are allowed. **Graphing calculators 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, the time allowed to take the exam might be reduced, the exam may be difficult, and the exam might not be returned. If you end up being a “borderline” grade case, makeups may hurt. Testing conditions may be very poor. A student must inform the instructor **as soon as possible** if accommodations need to be made. **Promptly inform the instructor 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 points = "100%"), divided as follows:

- QUIZZES AND MIDTERMS: 600 points (which is 60% of 1000 points)**
-- 2 quizzes given, worth 90 and 60 points (150 points total: 15% of 1000 points)
-- 3 midterms given, each worth 150 points (450 points total: 45% of 1000 points)

QUIZ 1A
Chapter 0: Preliminary Topics
QUIZ 1B
Chapter 1: Functions
MIDTERM 2
Chapter 2: Polynomial and Rational Functions
Chapter 3: Exponential and Logarithmic Functions
MIDTERM 3
Chapter 4: [Basic] Trigonometry
MIDTERM 4
Chapter 5: Analytic Trigonometry
Chapter 6: Additional Topics in Trigonometry
(FINAL)
Chapter 7: Systems of Equations [and Inequalities]
Chapter 8: Matrices and Determinants
Chapter 9: Discrete Math
Chapter 10: Conics and Polar Equations, as time permits

Exams are “closed book” and “closed notes,” but a scientific calculator may be allowed on some parts. (See **COME TO CLASS WITH / CALCULATOR INFO.)**

HOMEWORK (“HW”): 85 points (8.5%)

-- 6 HW assignments, corresponding to the six exams

HW for Quiz 1A	9 points
HW for Quiz 1B	6 points
HW for Midterm 2	15 points
HW for Midterm 3	15 points
HW for Midterm 4	15 points
HW for Final	25 points

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 HW 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 141” 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.

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. For grading purposes, 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: 65 points (6.5%)

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. **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 65 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 and the like) as soon as possible.

Students who miss the first two weeks of class will be dropped.

FINAL: 250 points (25%)

This will be given **during the last class session, on Thurs., May 17, in our regular room.** It will tentatively cover Chapters 7, 8, 9, and 10.

The Final is “closed book” and “closed notes,” but a scientific calculator may be 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 890 (89%)	A
At least 790 (79%)	B or better
At least 690 (69%)	C or better
At least 590 (59%)	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., Feb. 27 (Week 6).

An “Incomplete” may be given under special circumstances, provided that the student is otherwise passing the course.

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!
- 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.

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!!
- Many students are distracted by **WHISPERING!** The holes in the ceiling carry noise very effectively.
- **REMEMBER TO TURN OFF YOUR CELL PHONE!!!**

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 print out the course notes before or after a lecture.
Pdf files can be printed in various ways, including two-pages-to-a-side, double-sided (sometimes, something like 110% scaling for larger print can help; other times, text gets cut off, though).
- Copies of homework assignments and answers (provided in class and 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 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 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 (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
- Homework
We will discuss the homework during part of the session preceding the exam.
The homework is due on exam dates; keep checking our schedule online.

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 7:30am-5:00pm, F 7:30am-2:00pm. Web site: <http://www.sdmesa.edu/cdc>

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., Mar. 30. It is the instructor's discretion to withdraw a student after the add/drop deadline (Fri., Feb. 3) due to excessive absences (four 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.

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 maybe call me whenever you have questions.)

Week (Holidays / Deadlines)	TUESDAY	THURSDAY
1	1/24 (Day 1) Hello / 0.1-0.4	1/26 (Day 2) 0.5-0.8
2 Avoid W; Add codes (Fri., 2/3)	1/31 (Day 3) 0.9, 0.10, start 0.11	2/2 (Day 4) finish 0.11, 0.12-0.16, start 1.1
3 Refund deadline (Mon., 2/6)	2/7 (Day 5) finish 1.1, start 1.2 / HW	2/9 (Day 6) QUIZ 1A / finish 1.2, start 1.3
4 Holiday (Fri., 2/17 to Mon., 2/20)	2/14 (Day 7) finish 1.3, 1.4, 1.5, start 1.6	2/16 (Day 8) finish 1.6, 1.7-1.10, (discuss 1.11)
5 Holiday (Fri., 2/17 to Mon., 2/20)	2/21 (Day 9) 2.1, 2.2 / HW	2/23 (Day 10) QUIZ 1B / 2.3, start 2.4
6 Pass / No Pass petition (Mon., 2/27)	2/28 (Day 11) finish 2.4, 2.5	3/1 (Day 12) 2.6, 2.7
7	3/6 (Day 13) 3.1, 3.2, start 3.3	3/8 (Day 14) finish 3.3, 3.4-3.5, 4.1
8	3/13 (Day 15) start 4.2-4.4 / HW	3/15 (Day 16) MIDTERM 2
9	3/20 (Day 17) finish 4.2-4.4, 4.5	3/22 (Day 18) 4.6, start 4.7
10 W deadline (Fri., 3/30)	3/27 (Day 19) finish 4.7, 4.8, start 5.1	3/29 (Day 20) finish 5.1, 5.2 / HW
(11 if counted) No classes this week!	4/3 NO CLASS	4/5 NO CLASS
11 (or 12)	4/10 (Day 21) MIDTERM 3	4/12 (Day 22) 5.3, start 5.4-5.5
12 (or 13)	4/17 (Day 23) finish 5.4-5.5, 6.1, 6.2	4/19 (Day 24) 6.3, 6.4, (discuss 6.5)
13 (or 14)	4/24 (Day 25) 7.1-7.3, start 7.4 / HW	4/26 (Day 26) MIDTERM 4
14 (or 15)	5/1 (Day 27) finish 7.4, (discuss 7.5, 7.6), start 8.1	5/3 (Day 28) finish 8.1, 8.2, (discuss 8.3)
15 (or 16)	5/8 (Day 29) 8.4, (discuss 8.5), 9.1/9.6, 9.2, 9.3	5/10 (Day 30) 9.4, 9.5, Ch.10
16 (or 17) Semester ends Sat., 5/19	5/15 (Day 31) Ch.10 / HW	5/17 (Day 32) FINAL

Grades available online: Starting **Tues., May 29, 2012**; (<http://studentweb.sdccd.edu>)