

MATH 141: PRECALCULUS

SPRING SEMESTER, 2019 (1/28/19-5/25/19); SYLLABUS DATE: 1/21/2019

COURSE REFERENCE NUMBER (CRN): 76881

5.0 Units; Tues. and Thurs., 6:00-8:25pm in Room MS318 (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, 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! **Photos help!**

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 1000 non-extra-credit course points can be earned without them.

Computers and printers are available at the LRC (Library), see the 1st+4th floors. Let me know if you do not have access or if you see 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**. Email me.

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

• 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.

• I used to use **Larson's** Precalculus text. The notes from Chapter 2 on basically follow Larson's order of topics. **Cheap, old editions** are sold on ebay.com and amazon.com.

• **My website** has Amazon links to other books and videos. Check ebay.com. The LRC (Library) may have old editions; check the **QA section**. The **Schaum's Outline** paperbacks are much cheaper than textbooks, and they have many worked-out problems.

§ "EARLY" NOTES FOR CHAPTERS 0 AND 1:

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

§ THE REMAINING NOTES ARE ONLY ONLINE.

• Some people purchase a cheap, old edition of a textbook at this point. (See above.)

PREREQUISITE

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

COURSE DESCRIPTION (IN CATALOG)

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). Associate Degree Credit & transfer to CSU. UC Transfer Course List. MATH 116 and 141 combined: maximum credit, one course.

COURSE LEARNING OUTCOMES (MATH 141 COURSE CLOs)

- #1 - Given the representation of a graph ($f(x)$), students will identify the a , h and k variables in the expression $af(x-h)+k$ for a variety of transformations.
- #2 - Students will be able to calculate the difference quotient for a variety of functions and simplify it.

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. 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 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 called dot and cross products, 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

o *Students with disabilities who may need academic accommodations are encouraged to discuss their authorized accommodations from Disability Support Programs and Services (DSPS) 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 DSPS Office to ensure that proper accommodations are made for each student. By law, it is up to the DSPS 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 ensure 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 DSPS website at www.sdmesa.edu/dps 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 <http://www.sdmesa.edu/dps>.)
- Give me test proctoring forms for DSPS **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. 10am-3pm. <http://www.sdmesa.edu/mt2c>
- **NetTutor.** Free online tutoring. **Check my tutoring website:** <http://www.kkuniyuk.com/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: starrtrio@sdccd.edu. Web: <http://www.sdmesa.edu/star>

Student resources: <http://www.sdmesa.edu/student-services/student-services/ss-home-page/Helpful%20Resources%20for%20Students.pdf>

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

Dropping without a "W"; add codes (*)	Fri.	Feb. 8	Week 2
Refund eligibility for dropped classes	Fri.	Feb. 8	Week 2
Pass / No Pass petition	Mon.	Mar. 4	Week 6
Withdrawal deadline (**)	Fri.	Apr. 12	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 (see also ALEKS REVIEW + EXTRA CREDIT)

- 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 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 (15% of 1000 points)

(450 points total: 45% of 1000 points)

QUIZ 1A (90 points)
Chapter 0: Preliminary Topics
QUIZ 1B (60 points)
Chapter 1: Functions
MIDTERM 2 (150 points)
Chapter 2: Polynomial and Rational Functions
Chapter 3: Exponential and Logarithmic Functions
MIDTERM 3 (150 points)
Chapter 4: [Basic] Trigonometry
MIDTERM 4 (150 points)
Chapter 5: Analytic Trigonometry
Chapter 6: Additional Topics in Trigonometry
(FINAL) (250 points)
Chapter 7: Systems of Equations [and Inequalities]
Chapter 8: Matrices and Determinants
Chapter 9: Discrete Mathematics
Chapter 10: Conic Sections 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 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: 65 points (6.5%)

- 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 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) 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 will be given **during the last class session, on Thurs., May 23, 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:

	At least ... out of 1000 points			
Course score	890 (89%)	790 (79%)	690 (69%)	590 (59%)
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. 4 (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 any time (namely breaks).**
- 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 will 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. 12. It is the instructor's discretion to withdraw a student after the add/drop deadline (Fri., Feb. 8) 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)

ALEKS REVIEW + EXTRA CREDIT (UP TO 25 POINTS) **(6-WEEK LICENSE; CAN RENEW)**

- **Timing.** My “PreCalculus Chapter 0 S19” ALEKS course is based on Chapter 0, so you should do this ASAP (as soon as possible). It is not required, but it can help a lot – in terms of your knowledge of Chapter 0 material, and also in terms of points. You will likely purchase the 6-week license, but longer licenses are available. You can renew the license, though all work you do for extra credit must be done by **Thurs., May 23, the day of the Final** (about 11:59pm).
- **Losing ground.** ALEKS punishes procrastinators, so do not take long breaks in your progress through the system! Sometimes, students lose progress % points after retesting. I will try my best to capture your best % along the way through the midnight reports I receive.
- **Additional topics.** Although there are no plans (as of now) to make this extra credit, additional Precalculus topics may be available for your practice; check your email.
- **Purchasing and access.** ALEKS codes can be purchased through <http://www.aleks.com/> Email me for the class code and other info if you don’t get my email. (Note: My last name is misspelled as “Kuniyuiki.”) Check online for system requirements. Check my website.
- **Safari warning.** ALEKS might not work well on old versions of the Apple Safari browser.
- **Grading criteria.** I have determined the ALEKS “pie” for our class.

If you complete...	You will receive at least...
At least 50% of the ALEKS pie	5 points
At least 60% of the ALEKS pie	10 points
At least 70% of the ALEKS pie	15 points
At least 80% of the ALEKS pie	20 points
At least 90% of the ALEKS pie	25 points

You would get 6 points for 52%, 7 points for 54%, etc.

- **Assessment not-a-test.** Don’t cheat on this diagnostic tool! It is meant to place you accurately within the ALEKS system. You will end up doing **more** work if you are not correctly assessed!
- **Materials.** Pencil, paper, and a notebook are recommended.
- **Math 15s.** Our ALEKS-based Math 15 classes typically provide more supervision, although Math 15 credit does not apply to your grade in Math 141. Only take one at a time. A Math 15 class is Pass / No-Pass, one unit. Try to avoid a “W” withdrawal.

MATH 141 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.

SPRING 2019; Week (Holidays / Deadlines)	TUESDAY	THURSDAY
1	1/29 (Day 1) Hello / 0.1-0.5 start	1/31 (Day 2) finish 0.5-0.7
2 Avoid "W"; Adds / refunds (Fri., 2/8)	2/5 (Day 3) 0.8-0.10	2/7 (Day 4) 0.11-0.16
3 Holiday (Fri., 2/15)	2/12 (Day 5) 1.1, 1.2 / HW (discuss)	2/14 (Day 6) QUIZ 1A / 1.3
4 Holiday (Mon., 2/18)	2/19 (Day 7) 1.4, 1.5, 1.6	2/21 (Day 8) 1.7-1.10, (skim 1.11)
5	2/26 (Day 9) 2.1, 2.2 / HW	2/28 (Day 10) QUIZ 1B / 2.3, start 2.4
6 Pass / No Pass deadline (Mon., 3/4)	3/5 (Day 11) finish 2.4, 2.5	3/7 (Day 12) 2.6, 2.7
7	3/12 (Day 13) 3.1, 3.2, start 3.3	3/14 (Day 14) finish 3.3, 3.4/3.5, 4.1
8	3/19 (Day 15) start 4.2-4.4 / HW	3/21 (Day 16) MIDTERM 2
No classes this week!	NO CLASS	NO CLASS
9	4/2 (Day 17) "finish" 4.2-4.4, 4.5	4/4 (Day 18) 4.6, start 4.7
10 "W" deadline (Fri., 4/12)	4/9 (Day 19) finish 4.7, 4.8, 4.2- 4.4 parts, start 5.1	4/11 (Day 20) finish 5.1, 5.2, start 5.3 / HW
11	4/16 (Day 21) MIDTERM 3	4/18 (Day 22) finish 5.3, start 5.4/5.5
12	4/23 (Day 23) finish 5.4/5.5, 6.1-6.2	4/25 (Day 24) 6.3, 6.4, (skim 6.5)
13	4/30 (Day 25) 7.1-7.3, start 7.4 / HW	5/2 (Day 26) MIDTERM 4
14	5/7 (Day 27) finish 7.4, (skim 7.5, 7.6), start 8.1	5/9 (Day 28) finish 8.1, 8.2, 8.4 (skim 8.3, 8.5)
15	5/14 (Day 29) 9.1/9.6, 9.2, start 9.3	5/16 (Day 30) finish 9.3, 9.4, 9.5, start Ch.10
16 Semester ends Sat., 5/25	5/21 (Day 31) more Ch.10 / HW	5/23 (Day 32) FINAL

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

MATH 141: Precalculus; CRN 76881; 5 units; TTh 6:00-8:25pm in MS318 (Mesa)
Ken Kuniyuki; kkuniyuk@yahoo.com or kkuniyuk@sdccd.edu (official); (619) 388-2396
MTWTh 4:30-5:45pm in MS215-P.

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