

Syllabus

Math 130 (Precalculus) Kovitz Fall 2019

Course Description. Preparation for first year calculus. We will review needed college algebra for a few minutes in each class for the first few weeks. The subjects include polynomials, factoring, rational expressions and equations, quadratic equations, word problem strategies, and exponents. If you are weak or rusty, you will need to review this with our tutor and study on your own. A Test will be given on September 30. A low grade (say less than 60) means inadequate algebra. If you are willing to work 12 1/2 hours a week to catch up, Math 130 might work for you. Otherwise, see your advisor and instructor to decide what to do.

Part 1 includes Cartesian coordinates, straight lines, graphs, circles, reflections and symmetry, functions, the difference quotient, translations of graphs, even and odd functions, parabolas, extreme value of a quadratic function, max-min word problems, and composite and inverse functions.

Part 2 covers the exponential and logarithm functions, and some applications including exponential growth.

Part 3 includes the trigonometric functions and their inverses.

Free Online Text. At <http://www.opentextbookstore.com/precalc/> The required homework will not come from this text. I'll distribute classroom worksheets to you for every class.

Web Site. Many of the documents necessary for the course are accessible through the Mathematics Department Web Site. Most of them will be available on:

www.math.umb.edu/~skovitz/math130

Click for syllabus and practice sets and their solutions. Click each part of the course for worksheets or for instructional sheets or for examples with explanations. Homeworks and challenge homeworks are always posted. Handouts will both be put on the web site and given out in class. [courseinformationandsyllabus](#) has the syllabus and schedule and a file of summary information.

All worksheets will be distributed in class to use in the class. They will also be posted on the web site.

Solutions to tests and regular homeworks will not be posted on the web site, but are available by request in my office after the due date of the homework or after the test is given.

Calculators. A calculator which has log, exp, and trig functions (a "scientific" calculator) will be needed in Parts 2 and 3. A student should own one and be ready to use it by that part of the course.

Review. (1/4 class) Polynomials, factoring, rational expressions and equations, quadratic equations and inequalities, exponents, radicals, word problems, and absolute value equations and inequalities.

Part 1. (5 1/2 weeks) Cartesian coordinates, lines; graphs, circles; reflections, symmetry; functions, difference quotient, graph translations, even/odd properties; parabolas: extreme value of a quadratic function, graphing a quadratic function, max-min word problems; composite and inverse functions.

Part 2. (3 1/2 weeks) Exponential and logarithm functions; exponential growth.

The notation \exp_a , for the function defined by $\exp_a(x) = a^x$, might be used.

Part 3. (5 weeks) Trigonometry.

Final Exam. The final will be the same for all sections, scheduled for the week of December 16.

Next. For Calculus I (Math 140 or Math 145) you need at least a B in Math 130 to be admitted next term without the Placement Test. If you get a lower grade, say a C+, it is reasonable to take the ALEKS exam to seek admission to Calculus I that way. For Math 135 (good for some Biology and Psych majors and all IT majors), a D- or more will be OK. For Math 134, a passing grade is sufficient.

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Office Hrs.: Mon. and Wed.: 2:30-3:15 pm., Fridays (in September and October) 2:00-2:20 pm.

Policy on Attendance. Perfect attendance is strongly recommended to keep current with the work. The reference text will not contain all of the subject matter of the course. The attendance will be taken with a sign-in sheet, and the homework will be collected on a regular basis. In case of a transportation delay, snow emergency, or a personal emergency keep in mind that it is better to come in late than to miss class entirely. If you miss class without a written medical excuse, it is to be understood that you will receive a grade of zero for that day's assignment unless you send it in with someone else. However you should request the solutions either in my office or at the next class meeting. If a student misses two classes in a row, I will assume that he dropped the course unless I get an email of explanation. Should an emergency arise, please call me at (617)-287-6460. Or send me email.

In any case, be sure to come to class on time. Late arrival is frowned upon and leads to disruption of the lecture for others and incomplete mastery of the course material.

Algebra Diagnostic Test (Test 1). The test is given to assess your preparedness for this course and for Math 140 or Math 145.

You will be given assessment as to how well you know the necessary preliminary material. In some cases it might be evident that this is the wrong course for you. Feel free to see me in my office to discuss the results. This assessment is extremely important for those who need to take Math 140 or Math 145 as part of their program.

It is my experience that students who have inadequate preparation, as shown by poor performance on this test, rarely if ever pass Math 130 without extensive review of basic algebra.

Homework. The homework will not be accepted after the *beginning* of class on the due date. If you arrive late, please leave the homework on my desk when you enter. Be sure to ask for the handouts each day and to sign the attendance sheet. Include work, not just answers. A major accomplishment to be evaluated in the homework grade will be promptness. Late homework without a valid medical excuse in the form of a doctor's note will not be accepted. If you know that you will miss class, you may place the assignment in my mailbox at the Math Department the day before, fax it to me in care of the Math Department at (617)-287-6433 by the start of class, send it in with a friend, mail it to me at the math department, or in some cases email at least part of the solutions (graphs won't email well). Do the assignment even if you cannot complete it. Do not be ashamed to ask for help if you have trouble; do not be ashamed to hand it in if it is not complete. That is the only way I can assess your daily progress. A grade of 80 out of 100 will earn full credit; grades lower than 80 will earn $1/80$ of full credit for each point. It is possible that many of the lowest homework grades will be dropped. For that reason do not fret if circumstances prevent you from turning in an assignment or two. **In addition to the below-listed grading weight for homework, it should be emphasized that any student who does not hand in virtually all of the homework assignments is unlikely either to pass or to learn very much from the course.**

Grades. The course grade will be determined by the following:

One three-hour final exam: 32% of course grade

Best Four out of five tests: 15% each—60% of course grade

Homework assignments (best ten): 0.8 % each—8 % of course grade

Four short Quizzes: 1 % each—4 % of course grade as a bonus

Four challenge problems: $\frac{1}{4}$ % each—1 % of course grade as an additional bonus

Students who miss more than four assignments or have more than five unexcused absences can generally expect a grade of D– or less for the course.

The Grade of Incomplete. The grade of incomplete is rarely given in the mathematics department, and only in cases where a student who would otherwise pass has missed a *small* portion of the course work because of unavoidable circumstances. In that case the missed work must be made up according to a prearranged schedule, agreeable to the instructor and student. Generally that will require making up the work by the end of the next term. Failure to adhere to the schedule will automatically change the grade of Incomplete to F.

Tests. A cumulative final examination will be given during the week of December 16, room and date to be announced. Five tests are scheduled for September 30, October 9, October 21, November 15, and December 9. There will be four bonus quizzes, dates to be determined. If you are absent on a quiz day, you may not make up the quiz. All dates are subject to change; it is your responsibility to find out the actual date of each test or quiz.

No makeup tests or exams will be given. Missing two tests will drop a course grade one letter. In the case of a valid written medical or religious excuse or equivalent, there will be no penalty for any missed test or quiz. If something is anticipated and you let me know a week before, I might be amenable to giving you a substitute test or quiz before the scheduled date. This is not true for the final exam. It must be taken with the class.

Do not make travel plans before December 21.

It is important on all quizzes and tests to show your work—otherwise it is impossible to give partial credit if the final answer is wrong.

Alternative A or A– grade program. Students who aspire to an A grade should do all of the Challenge Problems in addition to the regular homework. In some cases of excellence, students will be given the option to choose a more challenging final exam, which guarantees a grade of B+ or better. This is only for those with a high A+ average before the final and before the bonuses are considered.

Challenge Problems. Those who aspire to a grade of C+ or better, should do most of the challenge problems. Help from a friend or a tutor is allowed. For a C– or less, competency in these difficult problems is not expected, but in every case they will improve the course grade if done correctly.

Bonuses for Good Attendance and Regular Homework. There will be certain bonuses, determined by a precise formula, for good attendance and homework handed in on time. Because of the difficulty of the course and the rigorous and demanding grading scale, these should be viewed as necessary to attain a good grade rather than a bonus. Be sure to bring written documentation for all excused absences. It is theoretically possible that good attendance and careful attention could, in very rare instances, raise a grade from F to A.

Therefore, it is important that you hand in the assignment in a timely fashion by the day that it is due. Do not wait until the next day; I will not accept the homework. Even if you complete only a portion of one problem, you will not be penalized for a missed assignment. If the score is poor, it is possible that the grade will later be dropped. Seeing this poor score when you made a serious effort is in itself a learning experience, warning you that as yet you don't really understand the material. If you had a problem with a given day's assignment, try to complete it just for practice; then request the solutions to see how well you have mastered it. Any further difficulties would indicate that you seek help, either from me, from someone else, or at a workshop.

It should be made clear that virtually every student who receives an A or B grade has done all the homework assignments on time and missed no classes at all, or very few. If you find it difficult to get the homework in on time and attend regularly, you should either withdraw or expect a very low grade: D or less.

Tutoring. Free tutoring and workshops are available, starting September 16, through the Mathematics Resource Center on the 8th floor of Healy Library. These services often help to resolve difficulties in the course if they are used early enough. A student doing D or F work must seek help immediately if he or she hopes to pass the course. All others are also likely to benefit from these services and should not hesitate to use them. For a tutoring appointment, sign up the week before.

There are also SI leaders to explain the week's material and talk over the homework. This is an excellent resource, even for an A student. This might be the best tutoring source. Go to the Student Success Center on the fourth floor of Wheatly Hall, room 151.

Policy on Honesty. It is the instructor's intent to enforce the University policy on honesty. Copying from prohibited sources including from other students during a test or quiz will result in a zero for both the person who copies and the person who allows it. Both students will be ejected from the room. It also could result in an automatic F for the course or a more severe penalty.

Signing another's name to the attendance sheet is improper conduct and will be dealt with harshly.

For homework assignments, students are encouraged to work together and this shall not be a violation of the plagiarism rules. However copying a homework paper from another student or from an answer sheet is a serious infraction. The minimum penalty will be a grade of zero for all homeworks.

General Education Distribution. This course satisfies the requirements for a general education distribution course. It helps to develop several competencies. The first is quantitative reasoning: working and reasoning with numbers. This is the math part of the course. The second is critical thinking and verbal reasoning. A third competency is cooperative work. This is accomplished by working on the homework with another student or within a group.

Disability Services. The Ross Center provides services for students with disabilities. It is located in the campus center, on the upper level, room 211, telephone 617-287-7430. It can provide such things as extended times for tests, note takers, adaptive computing. Any student with a documentable learning, physical, or mental disability should be in touch with the Ross Center. They will set up a plan to provide accommodations to ensure effective communication access and needed support services.

General Comments. All students are encouraged to see me in my office. If posted office hours are inconvenient, I will gladly try to arrange an appointment to meet on a class day at another time.

Should you have a complaint or a suggestion, let me know privately. Many good ideas from students could improve the course. Often they come too late to benefit those taking it this term. I am always seeking ideas to perfect the course and promise not to lower your grade if you have a complaint.

When handing in the homework, do not include the problem set, just your solutions and answers. *Be sure to show your work.* When it is convenient to use the homework sheet to fill in your answers, that will be fine. If you are absent, please request copies of the handouts you missed (sometimes they are also available on the web). Make sure you still do the homework that is due at the class following the one you missed. Don't fall behind. Being two days behind and doing well will generally result in a failing grade. Missing assignments just means that you have more work to make up later.

If you are a few classes behind on your work, please have the courtesy not to ask too many questions in class on material covered in the lectures you missed. Rather see me in my office for specialized help. This is in no way intended to discourage the asking of questions at the beginning of class on the previous day's work. No question is silly if it is well intentioned.

This course is intended primarily as a preparation for calculus. It is by no means a math survey course—the topics are very limited. The material will be presented in a challenging, thought-provoking and interesting manner. Careful and regular preparation of $1\frac{1}{2}$ to 4 hours for each class is essential. Furthermore, the latter parts of the course depend heavily on techniques covered earlier.

In recent years, as a sign of the times, there has been a tendency on the part of an inconsiderate minority to talk in class and disturb the concentration of other students. This will not be tolerated. That would also distract the instructor and force him to repeat himself unnecessarily and waste time. Also please turn off the ring tone on your cell phone during the lectures and tests. And if you must eat in class, eat quietly. Please respect the institution and help us assure all get full value for their tuition.

My policies do not include any scaling of grades. For that reason you should freely assist your fellow student as a gesture of good will. Cooperation cannot hurt your grade and might end up helping both of you. Working together on homework assignments, except for the algebra, exponent, and word-problem tests, is allowed and encouraged. This does not extend to tests and quizzes, of course. But for the rest of the course, get yourself a "study buddy." **If you feel uncomfortable, do not share your private information, such as cell phone number, with your study buddy. Instead use the UMass email account for communication.**

I will start the class 2 minutes early with a warmup. If possible, arrive a bit early. In any case, very useful practice will frequently be done in the first 5 or 7 minutes of class. Coming in on time will afford you the opportunity to take advantage of this review. Students who arrive late often do poorly on that day's quiz or test.

Come on time, and turn off cell phones and pagers.

Good luck. Learn well and enjoy.