

MAC1140 - Precalculus Algebra

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Syllabus

Course Description

This is MAC1140 - “Precalculus Algebra”. This course will cover all standard aspects of precalculus except for trigonometry. This includes; terminology, variables, general functions, basic modeling of real world examples, translations, transformations, polynomials, radical functions, exponential functions, logarithmic functions, piecewise functions, and rational functions.

A minimum grade of C (not C-) in MAC1140 satisfies three credits of the university General Education Math requirement. See more about this in the General Education Information below.

Prerequisites

MAC1140 does not require any prerequisites, but it does assume basic numerical literacy. Students should be able to do basic arithmetic without a calculator. If the pace or level of course material appears to be beyond your experience or ability I highly suggest you look into taking MAC1105 “College Algebra” instead. You may switch courses at <https://student.ufl.edu/> during the drop-add period. If you want advising on which courses to take or a path through the required math courses for your major, you should talk to your academic advisor, and/or the undergraduate mathematics coordinator. You can find contact information for the undergraduate math coordinator at <https://math.ufl.edu/people/administration-2/>.

Course Materials

There are no required materials for this course; specifically there is no required textbook, clicker, or online homework code that you must purchase for this course.

In this course we will utilize a free online homework system known as Xronos. This work is supported by the Office of the Provost and the College of Liberal Arts and Sciences. The platform is accessible through the Canvas site via the “assignments” tab. More details are available on Canvas.

Note that any Recommended/Required reading assignments will be listed in Canvas, likely in the listed module/lessons for the week. In addition, announcements and/or emails will be sent out to supplement as needed.

Course Goals:

This is MAC1140 “Precalculus Algebra”. The goal of this course is to provide the mechanical and conceptual tools necessary to continue on to Business Calculus’ (MAC2233). If, in addition, a student takes MAC1114 “Trigonometry”, they have the tools necessary to go on to ‘Calculus One’ (MAC2311). Alternatively one can take the accelerate combined Precalculus algebra and trigonometry class MAC1147 instead of taking MAC1140 and MAC1114.

Online Resources

E-learning Canvas, a UF course management system, is located at <https://elearning.ufl.edu>. Use your Gatorlink username and password to login. All course information including your grade on assignments, course homepage, syllabus, Xronos content (which includes lecture videos and practice problems), office hours, exam information, mail tool, discussion forum, free help information, etc. can be accessed from this site. **You are responsible for verifying that your grades are accurate. There is no grade dispute at the end of the semester** (see below for the One Week Policy). Note that the Canvas “course grade” is rarely accurate given Canvas’s limited ability to calculate grades. So, although you should verify your assignment grades are accurate, you should use the grade calculator (located in the orientation module) to determine your actual course grade.

Instructional Design

The vast majority of instructional content for this course will take place via the Xronos system. This is an interactive site that will contain both the (embedded) lecture videos and text content which will provide the instructional content, as well as practice problems and example exams.

Keep in mind that, as much as I try to make the lecture videos as ideal and engaging as possible, this is only one step in the process. You should think of the lecture videos as a starting point. You should also read the associated

text (which may also contain other examples, or specific information). When you have questions, take the time to email the instructor/TA(s), or attend any of their office hours.

If you never interact with the instructor or TA outside of the required meetings, it is unlikely that you will get a good grade in the course. More importantly you are passing up an invaluable resource in the form of personalized one on one instruction from an expert in the field to help you with whatever questions you have, big or small. We want to help, but we can't if you don't ask us questions; we aren't mind readers and can't know what you need help with without some help from you first!

When it comes to the lecture videos there are a few things to keep in mind as you watch them. Please read below to understand why some parts of the videos might be boring, while some might seem way too hard.

- First and foremost this course is intended to get students prepared for one of the UF calculus sequences. The calculus sequence is *considerably* more conceptual, rigorous, and difficult than high school or advanced placement (AP) type courses, and the precalculus courses are similarly much more difficult in preparation for this. In particular, even students that routinely have gotten A's in their math courses in high school will likely find this course quite challenging.
- This course also aims to get everyone on the same mathematical level in terms of notation, communication, and terminology before students move forward. As such there will inevitably be times when you will find the content boring or otherwise elementary (for stuff you are quite familiar with but others may not be) and other times it will seem like content is going by way too fast or without enough detail (for content that you may be less familiar with). This is because not everyone will be familiar with any given aspect, which means we must cover everything to some extent. However, due to the quantity of material that we need to cover from this, each of these excursions will be only a brief overview.
- In this course we also aim to instill the basics of mathematical reasoning. This means teaching how to problem solve when presented with content that is otherwise unfamiliar. Importantly this means that **you should expect to be confronted with problems that you have not seen before**. If you have always had problems that are variations of problems that have been demonstrated for you already, then your teachers have done you a grave disservice.
- **Expect to have to reason and think on the fly during exams, quizzes, and homework.** You will almost certainly see questions on your assessments that are unfamiliar. Remember that part of the content for this course is teaching you **how to recognize aspects of a problem, which inform what techniques you should use**.
- Finally, remember that math, by its nature, is cumulative. If an exam has listed content that will be tested, that means that the listed content is the *focus* of the exam, but *not the only skills necessary for the exam*. Clearly we will not list on every exam things like 'addition' or 'multiplication' as exam topics. Similarly, most of the content that we will cover in this class, by its nature, will be used in future content of this same course. Thus you should consider all exams as "cumulative" with the listed content for the exam being the primary *focus* of the exam.

One Week Policy

Please be aware of the **One Week Policy**: Once an assignment's recommended due date has passed, you have **one week** to contest the grade and initiate any grade disputes. Once this one week passes, **there are no further disputes**. In particular, once the end of the semester nears, you *cannot* start disputing, say, grades from the first week or two. Also note that, for assignments due at the end of the semester, there isn't time for a full week to dispute grades, i.e. the grade dispute period is one week, or the end of the semester - whichever comes first.

Calculators

A graphing calculator and Wolframalpha are useful as study and learning tools when used appropriately, **but they are not essential**. I also recommend the online graphing calculator Desmos (<https://www.desmos.com>), and the app GeoGebra (<https://www.geogebra.org>) to help you as you learn the material. Keep in mind however, mathematics is a collection of ideas that are not mastered through calculator skills. **No calculators are allowed on quizzes or exams**. Also note that exams are written with the lack of calculator in mind.

Incomplete Policy

A grade of I (incomplete) will be considered only if you meet the Math Department criteria which is found at <https://www.math.ufl.edu>. If you meet the criteria you must see the instructor before the beginning of finals week to be considered for an I. A grade of I only allows you to make up your incomplete work. You cannot redo any previously completed work.

Online Course Evaluation

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://gatorevals.aa.ufl.edu/>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given notification by UF when they become open.

Advising and Help

- The Orientation has an “FAQ” with links and answers to the **vast majority** of questions students encounter in a given semester; from problems with Xronos, to who to contact with a question, comment, or concern. I would highly recommend using the FAQ as a first point of reference when you have a question!
- For issues with technical difficulties for Canvas, please contact the UF Help Desk at:
 - Website: <https://helpdesk.ufl.edu>
 - Phone: (352) 392-HELP (4357)
 - Walk-in: HUB 132

Note: Any requests for make-ups due to technical issues **MUST** be accompanied by the ticket number received from the Help Desk when the problem was reported to them. The ticket number will document the time and date of the problem. You **MUST** e-mail your instructor within 24 hours of the technical difficulty if you wish to request a make-up.

- For any concerns with MAC1140, please talk to your TA or Instructor! Office hours will be posted and are regular times when they are available to answer questions, discuss grades, advise students on future classes, or help students in any available way. You do **not** need an appointment to visit during office hours. If you need to meet **outside** of office hours, please contact your TA or Instructor for an appointment.
- In addition, there are several other free resources available to you:
 - The Teaching Center Math Lab, located at SE Broward Hall, offers free informal tutoring. You may want to attend different hours to find the tutors with whom you feel most comfortable. Also the Little 215 Tutoring Center provides free tutoring for courses up to Calculus 1. Go to <https://www.teachingcenter.ufl.edu> to find their hours. You can also request free one-on-one tutoring.
 - A list of qualified tutors for hire is available at <https://www.math.ufl.edu><https://www.math.ufl.edu>.
 - Other resources are available at <https://www.distance.ufl.edu/getting-help> for:
 - * Counseling and Wellness resources
 - * Disability resources
 - * Resources for handling student concerns and complaints
 - * Library Help Desk support
- Should you have any complaints with your experience in this course please visit <https://www.distance.ufl.edu/student-complaints> to submit a complaint.

Class Demeanor or Netiquette

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats. A guide to online etiquette is available at:

<http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.pdf>

Honor Code

All students are required to abide by the Academic Honesty Guidelines which have been accepted by the University. The academic community of students and faculty at the University of Florida strives to develop, sustain and protect an environment of honesty, trust and respect. Students are expected to pursue knowledge with integrity.

Violations of the Academic Honesty Guidelines shall result in judicial action and a student being subject to the sanctions in paragraph XIV of the Student Code of Conduct. The conduct set forth hereinafter constitutes a violation of the Academic Honesty Guidelines (University of Florida Rule 6C1-4.017). You may find the Student Honor Code and read more about student rights and responsibilities concerning academic honesty at the link <https://www.dso.ufl.edu/sccr/>.

Students with Disabilities

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting: <https://disability.ufl.edu/students/get-started/>. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester. If a student does not supply the appropriate documentation in a timely fashion, the instructor may not be able to accommodate the student in a timely manner.

Online Privacy

ONLINE PRIVACY: Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

General Education Information

General Education Objective (Mathematics)

Courses in mathematics provide instruction in computational strategies in fundamental mathematics including at least one of the following: solving equations and inequalities, logic, statistics, algebra, trigonometry, inductive and deductive reasoning. These courses include reasoning in abstract mathematical systems, formulating mathematical models and arguments, using mathematical models to solve problems and applying mathematical concepts effectively to real-world situations.

In this course, this objective will be met by . . .

This course provides the fundamentals in solving equations, inequalities, and manipulating various functional types using primarily deductive logic techniques. It also covers the basics of mathematical modeling and how to apply mathematical concepts to real-world situations.

Student Learning Outcomes (SLOs)

In general, the following Student Learning Outcomes are intended to be covered in the course:

Content: Students demonstrate competence in the terminology, concepts, methodologies and theories used within the discipline.

Communication: Students communicate knowledge, ideas, and reasoning clearly and effectively in written or oral forms appropriate to the discipline.

Critical Thinking: Students analyze information carefully and logically from multiple perspectives, using discipline specific methods and develop reasoned solutions to the problems.

For more on the general subject area objectives for mathematics (and other disciplines) you can [visit UF's master list here](#).

In particular, these SLOs are met in MAC1140 as outlined below. Specifically, by the end of the course, students should be able to...

- Correctly use critical terminology, concepts, methods, and theories from concept videos and text to express mathematical ideas accurately and succinctly. This will include terminology used within the discipline to communicate mathematical ideas efficiently and accurately.
- Solve algebraic systems modeled by a variety of function types.
- Recall and apply several important theorems appropriate to the course level.
- Demonstrate their competencies via interactive online coursework, quizzes, and exams.
- Interpret and explain various levels of data, from premodeled systems, to real-world descriptions that require mathematical modeling.
- Solve for desired information from their models, in order to answer questions about the situation being modeled.
- Develop and manipulate their own models from descriptions of real world events or problem statements, which may include extraneous information or even incomplete information (forcing students to propose what information would be necessary to complete the model and/or solve for the desired information).
- Apply critical thinking, as described in the Instructional Design and Exam Design sections to complete any/all of the above SLOs.

Each of these SLOs are assessed via the Xronos practice content, Canvas Quizzes, and the Canvas Exams.

Grading

See the tables below to see what will contribute to your grade, and what is necessary to attain a specific grade.

Assignment	Point Value	Total Points	Grade	Point Range	Grade	Point Range
Xronos (3 assignments)	34, 33, and 33	100	A	405-450	C*	315-329
Quizzes (10 of 14)	10	100	A-	390-404	C-	300-314
Exams (3 total)	50	150	B+	375-389	D+	285-299
Final	100	100	B	360-374	D	270-284
Total Points		450	B-	345-359	D-	255-269
			C+	330-344	E	0-254

* Note that a minimum grade of C is required for General Education credit.

Online Coursework

In this course we will utilize an in-house interactive online homework system developed by the math department at UF. This platform, called Xronos, is free of charge.

The lecture videos are embedded, along with supplementary videos and interactive content spread throughout for asynchronous learning in the course. There are three Xronos assignments in Canvas, one for each of the content modules. Each of these is an interactive set of course notes and videos that presents the course information and practice. It has numerous interactive features as well as examples and problems scattered throughout. Each assignment should be completed by the end of the relevant module, although you can return to do more practice and even earn more credit for any of the Xronos assignments until the final exam.

I recommend you **do not try to complete the entire assignment at the end**. First, there is simply too much to do all at once, and second it is intended as one of the primary sources of learning for the exams and content. Your best bet is to be diligent and do the Xronos content throughout the semester as outlined in the module.

There are some notes to keep in mind about how Xronos works:

- You **MUST** access Xronos via Canvas **every single time you do your homework**. Do not bookmark the page, do not save the page, do not access Xronos directly via a link – you **MUST** go through Canvas **EVERY TIME**. If you do not – you will not receive credit for the problems you solve. This cannot be stressed enough.
- Canvas may (and almost certainly will, often) tell you that a grade has been submitted for the “Xronos assignment” whenever you work on it. Rest assured that canvas really means that a grade **update** has been submitted, not a final grade. You can continue working on Xronos and accumulating points, right up until the Xronos assignment is due; there is no “final submission” of a grade prior to that, regardless of what canvas might try to tell you.
- Throughout the text there are problems embedded to monitor learning and give examples. These are counted as part of the grade, and you are required to complete these to get credit for the assignment. You are free to work together on these problems, but keep in mind they are intended as practice, and as such **you are responsible for knowing the material covered in the homework**.
- In most of the concept tiles (the square tiles, as oppose to the thin vertical rectangles) are lecture videos. Completing watching these counts toward credit for completion for the tile, so you must watch the videos in order to get full credit for the tile (and thus the Xronos assignment).

Quizzes

Quizzes will be administered in Canvas. These will be twenty-five minute assessments to keep you up to date on the content as we progress through the course. There are fourteen quizzes offered, but we will count the top ten grades (meaning the four quizzes will be dropped automatically when grades are calculated). Keep in mind, with the way the course is structured, assessments will get progressively harder as we go through the semester. This means if you skip a quiz early on and decide it will be a “drop” quiz, that you will be trading a much easier quiz for a much harder one later on.

Since we are dropping four quizzes, we will **not be offering makeup quizzes**. Keep this in mind when you are considering your scheduling for the semester.

Exams

Exams in this course will be proctored using a proctoring service called Honorlock. Information on how to sign up for Honorlock will be posted to canvas. The exams will be open all day on the assigned day, so you should be able to schedule your time around any other responsibilities that day, but if you have concerns please contact your instructor. Also ensure that you are in an area with a stable internet connection, and that you have ensured Honorlock works (I would recommend taking the Honorlock test quiz, which is not worth any points but should verify the technology works on your setup).

There are three exams during the semester, with a final at the end (for a total of four tests). The specific date for each exam can be found in Canvas; but the content is as follows:

Exam	Content
Exam 1	Module 2
Exam 2	Module 3
Exam 3	Module 4
Final	Cumulative

An Important Note About Exam Design

Another remark about the exams is necessary. Typically, for most math courses (not just this one), the class mean average exam score is in the 63% – 68% range. This often comes as a (rather unpleasant) shock to students, especially those that are newer to UF and are use to getting consistently excellent grades. The instructor and TA(s) will provide all the help they can, and there is unlimited practice offered as well (through the “try another” button on practice tiles), but ultimately you are on your own for exams, and they are exceptionally challenging.

The exams are *not* written with the intention that the problems are ones that you have already seen with different numbers. One of the primary purposes of this course is to teach you how to use mathematical tools to solve mathematical problems, which requires knowledge, understanding, and creativity to figure out which tool to

use, when to use it, and how to use it correctly. We aren't trying to teach you to (only) follow a preset list of instructions. We are trying to teach you to be a problem solver; one who can utilize their knowledge and skills to unravel a completely new problem when they are confronted with one.

Final

There will be a final exam (see Canvas for the date) which will be cumulative, thus any content covered this semester is "fair game" for the final (including any content covered after the last exam prior to the Final). Since the final is cumulative, I will replace your lowest exam score with half the points you earn on the final (only if it helps. Notice that the final is worth twice the points of a standard exam, thus half the points on the Final will be equivalent to the number of points on a single exam. In other words - the percent you get on your final exam will replace the percent on your lowest exam score if it helps). This will be done automatically, **You do not need to request this**. Moreover, this grade substitution is done *only* in the calculation process, the actual exam grades themselves won't change in Canvas (for academic record reasons).

Course Attendance and Interaction

This course is provided online and asynchronously. This means that there are **no** regular meeting times of the entire class, or even smaller subsections (e.g. sections for discussion courses) as part of the base structure. This clearly means that attendance is not tracked or mandatory - since there is no regular meeting to attend. Moreover, due to the course design, the makeup policy is intended to be more forgiving for those with complex schedules (see below). Nonetheless, keep in mind that the attendance policy adheres to UF's [attendance and makeup policy](#).

This is intended to allow a more flexible scheduling of content, especially for those that have irregular schedules - like full time work or considerable travel or other responsibilities outside of coursework. The intent is that the content is broken up in such a way that you can do larger chunks in advance - to account for times when you might not be able to do regular course work throughout a week as is typical in a more standard course.

Unfortunately, this also means that it is very easy to lose track of content and fall behind and due to a lack of forced meeting times, it can also feel isolating. I encourage you to regularly post in the discussion board, email, and/or attend office hours to help keep a regular schedule - whatever that means in relation to your own non-academic schedule.

Makeup Policies

Requirements for class attendance - and the makeup policy - in this course is consistent with university policies. See below for class policies for makeup content (by type of content).

- **Xronos:** There are no make-ups for Xronos since it is due at the end of the semester.
- **Quizzes:** Due to the extra quizzes, there are no makeups for quizzes.
- **Exams:** In order to get a makeup exam you must have a documented (and valid) reason to miss the exam. Otherwise you must rely on the half-final-grade option mentioned above.

You can find the UF guidelines on grading here: <https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>.

Calendar

In general, each week will involve a listed segment of Xronos to complete, which will involve somewhere between 3 and 8 concept videos (generally more at the beginning of the semester due to review) and associated text - typically between 3 and 10 pages of reading (again, more text at the beginning of the semester due to review, and less as we progress through the semester). Each week will have a quiz on that week's material, and each of the listed modules below will culminate in an exam. Regular practice problems are given throughout the process, with a minimal number being required, but unlimited practice supplied via algorithmic problem generation. More on this is described in Canvas, along with a very specific assignment breakdown - which can fluctuate slightly from semester to semester due to various university and holiday constraints.

Module 1: Orientation, Review and Needs Assessment

Week 1: Review of Arithmetic and Algebra, Introduction to Mathematical Reasoning, Applying Mathematical Reasoning to Numeric Models.

Module 2: Universal Objects and Properties

Week 2: Introduction to Functions; Domains, Range, CoDomains, Notation, and Composition. Introduction to Graphing.

Week 3: Continue Introduction to Graphing, Library of Functions.

Week 4: Translations and Transformations of functions.

Week 5: Points of Interest; Zeroes, Intercepts. Algebraic Manipulation of Functions, Inverse Functions.

Module 3: Exploration of Functions One:

Week 6: Polynomials; Introduction and definitions.

Week 7: Polynomials: Factoring Methods.

Week 8: Polynomials: Synthetic and Long Division, Complex Numbers.

Week 9: Radical Functions.

Week 10: Inequalities.

Module 4: Exploration of Functions Two:

Week 11: Exponential Functions.

Week 12: Logarithmic Functions.

Week 13: Piecewise Functions.

Week 14: Absolute Value Functions.

Week 15: Rational Functions.

Week 16: Review and Catchup

The above is a general week by week outline of intended content coverage, but for the most updated dates and timeline, please see the Canvas "Recommended Xronos Progression Table" on Canvas. Also note that, due to holidays or breaks, the last week is often injected as a break week during semester, rather than a review week at the end of the course.