

COURSE SYLLABUS FOR MATH 2312 PRECALCULUS

YEAR COURSE OFFERED: 2021-2022

SEMESTER COURSE OFFERED: FALL

DEPARTMENT: MATH

COURSE NUMBER: 2312 (Section: 12254)

NAME OF COURSE: PreCalculus

NAME OF INSTRUCTOR: Irina Perepelitsa

Instructor Information

- Instructor: Irina Perepelitsa
- Office: PGH 214
- Office Hours: Online via Teams
- Email: iperepel@central.uh.edu

The information contained in this class syllabus is subject to change; the instructor reserves the right to make changes. Any changes will be announced on CASA or in class. Students are expected to be aware of any additional course policies presented by the instructor during the course.

PREREQUISITES: MATH 1314 (Previously known as MATH 1310): College Algebra or a passing score on the test for placement out of College Algebra.

Math 2312 is a course mainly for students who have Calculus I in their degree plan. As such, the following rules apply to this course:

No calculators to be used on homework, quizzes, or tests (*).

No opt-out on the final; the final is mandatory for all students.

Please see an advisor to check about Calculus I being in your degree plan. If it is not there and if Math 2312 is not required for your major (as a prerequisite for another course), please take Math 1332 and Math 1342 as your core and reasoning.

*if you have calculator use on a SAF form, please take Math 1332 (Previous code: 1311) and Math 1342 (Previous Code: Math 2311)

COURSE SYLLABUS FOR MATH 2312 PRECALCULUS

NOTE (TCCNS Course Code): If you see any reference to “Math 1330” in your textbook, your instructor’s notes, website or any other course materials, note that Math 1330 is the previous code for Precalculus and we will be using the code “Math 2312” starting Fall 2021.

TECHNOLOGY REQUIREMENTS:

Computer and internet access is required for this course. In summary, students will need:

- a functioning and updated computer
- reliable internet connection
- PDF viewer
- Ability to log in to CASA for online assignments.
- Ability to watch mp4 files.
- Ability to access Microsoft TEAMS platform. Note that all UH students have access to MS teams with their cougarnet ID.

Resources for Online Learning

The University of Houston is committed to student success, and provides information to optimize the online learning experience through our [Power-On](#) website. Please visit this website for a comprehensive set of resources, tools, and tips including: obtaining access to the internet, AccessUH, and Blackboard; requesting a laptop through the Laptop Loaner Program; using your smartphone as a webcam; and downloading Microsoft Office 365 at no cost. For questions or assistance contact UHOnline@uh.edu.

COURSE DELIVERY FORMAT

This course is being offered in the face to face format. This course is not self-paced; students are expected to follow assignment due dates as specified on CASA calendar. **Live meetings** (lectures) for this course will take place according to the class schedule. This is a face to face lecture and by signing up for this class, students agree that they are available during the meeting times.

Due to the changing nature of the pandemic, the team for this lecture will be created and available on MS TEAMS. In case of a need to move to the online setting, all students will be enrolled in the team.

- Make sure you are a member of the team: *to be determined if needed*
- If we move to the online setting: Students are expected to behave professionally during live meetings. Any students who do not follow the university’s code of conduct might be removed from the meeting. Turn off your webcam and microphone before joining the meeting.

COURSE SYLLABUS FOR MATH 2312 PRECALCULUS

Face Covering Policy

To reduce the spread of COVID-19, the University strongly encourages everyone (vaccinated or not) to wear face coverings indoors on campus including classrooms for both faculty and students.

Presence in Class

Your presence in class each session means that you:

- Are NOT exhibiting any [Coronavirus Symptoms](#) that makes you think that you may have COVID-19
- Have NOT tested positive or been diagnosed for COVID-19
- Have NOT knowingly been exposed to someone with COVID-19 or suspected/presumed COVID-19

If you are experiencing any COVID-19 symptoms that are not clearly related to a pre-existing medical condition, do not come to class. Please see [Student Protocols](#) for what to do if you experience symptoms and [Potential Exposure to Coronavirus](#) for what to do if you have potentially been exposed to COVID-19. Consult the (select: [Undergraduate Excused Absence Policy](#) or [Graduate Excused Absence Policy](#)) for information regarding excused absences due to medical reasons.

COVID-19 Information

Students are encouraged to visit the University's [COVID-19](#) website for important information including on-campus testing, vaccines, diagnosis and symptom protocols, campus cleaning and safety practices, report forms, and positive cases on campus. Please check the website throughout the semester for updates.

Vaccinations

Data suggests that vaccination remains the best intervention for reliable protection against COVID-19. Students are asked to familiarize themselves with pertinent [vaccine information](#), consult with their health care provider. The University strongly encourages all students, faculty and staff to be vaccinated.

Reasonable Academic Adjustments/Auxiliary Aids

The University of Houston complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, pertaining to the provision of reasonable academic adjustments/auxiliary aids for disabled students. In accordance with Section 504 and ADA guidelines, UH strives to provide reasonable academic adjustments/auxiliary aids to students who request and require them. If you believe that you have a disability requiring an academic adjustments/auxiliary aid, please contact [the Justin Dart Jr. Student Accessibility Center](#) (formerly the Justin Dart, Jr. Center for Students with DisABILITIES).

Excused Absence Policy

Regular class attendance, participation, and engagement in coursework are important contributors to student success. Absences may be excused as provided in the University of Houston [Undergraduate Excused Absence Policy](#) and [Graduate Excused Absence Policy](#) for reasons including: medical illness of student or close relative, death of a close family member, legal or government proceeding that a student is obligated to attend, recognized professional and educational activities where the student is presenting, and University-sponsored activity or athletic competition. Under these policies, students with excused absences will be provided with an opportunity to make up any quiz, exam or other work that contributes

COURSE SYLLABUS FOR MATH 2312 PRECALCULUS

to the course grade or a satisfactory alternative. Please read the full policy for details regarding reasons for excused absences, the approval process, and extended absences. Additional policies address absences related to [military service](#), [religious holy days](#), [pregnancy and related conditions](#), and [disability](#).

Recording of Class

Students may not record all or part of class, livestream all or part of class, or make/distribute screen captures, without advanced written consent of the instructor. If you have or think you may have a disability such that you need to record class-related activities, please contact the [Justin Dart, Jr. Student Accessibility Center](#). If you have an accommodation to record class-related activities, those recordings may not be shared with any other student, whether in this course or not, or with any other person or on any other platform. Classes may be recorded by the instructor. Students may use instructor's recordings for their own studying and notetaking. Instructor's recordings are not authorized to be shared with *anyone* without the prior written approval of the instructor. Failure to comply with requirements regarding recordings will result in a disciplinary referral to the Dean of Students Office and may result in disciplinary action.

Syllabus Changes

Due to the changing nature of the COVID-19 pandemic, please note that the instructor may need to make modifications to the course syllabus and may do so at any time. Notice of such changes will be announced as quickly as possible on CASA, instructor's website, or MS Teams.

Helpful Information

Coogs Care: <https://www.uh.edu/dsaes/coogscare/>

Laptop Checkout Requests: <https://www.uh.edu/infotech/about/planning/off-campus/index.php#do-you-need-a-laptop>

Student Health Center: <https://www.uh.edu/healthcenter/>

COURSE SYLLABUS FOR MATH 2312 PRECALCULUS

TEXTBOOK & ACCESS CODE

The textbook, online quizzes, and additional help materials will be made available by logging into CourseWare at <http://www.casa.uh.edu>. The first portion of these materials are freely available for the first two weeks of class. **Students are required to purchase an access code to access the learning materials by the due date announced on CASA. Access code can be purchased at UH Book Store. If you don't enter the code by the deadline stated on CASA, you will lose access to CASA temporarily – until you enter the code. If students miss assignments during the no access period, they should not expect to have make up options for those assignments.**

COURSE OBJECTIVES FOR PRECALCULUS

When you successfully complete this course, you will be able to:

1. Recall and apply basic algebra skills without requiring a review.
2. Recognize various kinds of functions (including polynomial, rational, radical, exponential, and logarithmic functions), analyze their behavior, and use the properties of these functions to solve equations and application problems.
3. Define trigonometric functions; understand the right triangle trigonometry and unit circle.
4. Know and apply identities involving the trigonometric functions.
5. Recognize the conic sections and their geometric properties.
6. Exploit graphical and analytical techniques in solving problems.
7. Analyze and explain the important elements of the mathematical solution of equations.
8. Recognize and use the vocabulary of vectors (vector, scalar, magnitude, direction) to perform arithmetic on vectors and to solve application problems.
9. Be self-disciplined and dependable through daily consistent work.

COURSE POLICY QUIZ

The course policy quiz can be found on CASA under “online assignments” tab. Students need to make 100% on this quiz in order to have access to other online assignments (quizzes, tests, etc.). Read the syllabus before taking this quiz.

ASSESSMENTS

A student in this class is expected to complete the following assignments:

- 1) Course Policy Quiz
- 2) 4 Regular Exams
- 3) Final Exam
- 4) Online Quizzes
- 5) Homework
- 6) Poppers

COURSE SYLLABUS FOR MATH 2312 PRECALCULUS

Components and Weights of Semester Assignments:

Test 1	5%
Test 2	16%
Test 3	16%
Test 4	16%
Final Exam	20%
Online Quizzes	15%
Homework	12%
Total:	100%

Note: The percentage grade on the final exam (without extra credit) can be used to replace your lowest test score if it is better than your lowest test grade.

GRADING SCALE

If “x” is your average, letter grades will be assigned as follows:

A	$93 \leq x$	B-	$80 \leq x < 83$	D+	$67 \leq x < 70$
A-	$90 \leq x < 93$	C+	$77 \leq x < 80$	D	$63 \leq x < 67$
B+	$87 \leq x < 90$	C	$73 \leq x < 77$	D-	$60 \leq x < 63$
B	$83 \leq x < 87$	C-	$70 \leq x < 73$	F	below 60

Note that the Letter Grade Calculator does not round; for example, 79.99 is not rounded to 80.

EXAM INFORMATION

There will be 4 tests along with a mandatory final exam.

- Test 1 is an online test covering pre-requisites (algebra)- see below for more information.
- Tests 2, 3, 4 and final exam will be taken at CASA Testing Center by reservation.
- Tests will be taken with reservation; **you must make a reservation to take a test prior to the first testing day.** Follow the instructions on CASA to reserve a time for your tests; print out the webpage showing your reservation time for your records and proof of your reservation. Reservations are made on a first come first served basis; schedule your exams as soon as the scheduler opens up.
- If you miss your reserved time, log in to your account to see if there are any other time slots available and if so, make a new reservation.
- You have 1 attempt on all tests.
- You can NOT use calculators during any of the exams; study accordingly.

COURSE SYLLABUS FOR MATH 2312 PRECALCULUS

Test 1 is over the pre-requisite material (algebra). Test 1 can be found under the “online assignments” tab at CASA. You have 1 attempt on it.

It is recommended to take practice test 1 first to see what to expect on Test 1. You can review basic algebra topics to prepare for this test. You can find help videos for these topics on the course website (or here: <https://online.math.uh.edu/courses/placement/Modules.html>)

IMPORTANT: If you score low on Test 1 (below 60 without extra credit); you may consider dropping this course and taking the prerequisite course to prepare yourself for this course. If you decide not to drop, it is strongly recommended that you sign up for an SEP workshop designed for Math 2312 students; you can add a workshop in your PS account before the last day to add.

Exam topics: *(Any changes on the exam topics or dates will be announced on the course website or at CASA calendar)*

Test 1	Prerequisite Material	Aug 23- Sep 2
Test 2	Chapter 4	Sep 16- Sep 20
Test 3	Chapter 5, 6.1, 6.2	Oct 15 – Oct 19
Test 4	6.3, Chapter 7, Vectors, Chapter 8	Nov 16-Nov 20
Final	Comprehensive (covers all chapters)	Dec 8 – Dec 15

Final Exam:

Final is comprehensive and mandatory for **ALL** students. **There is no “exemption” or “opt-out” from the final.** Check course website for final exam schedule. Reserve a seat for it when reservation begins. Reservations are made online at CASA on a first come first serve basis. **Make your travel plans so that you are available during the testing period.**

Your raw score on the final will be used to replace the lowest test score if it is better. The primary reason for this policy is to offset the impact of zero scores due to emergencies (medical, personal, or otherwise) on a student’s final course grade.

Grade Appeals: Grade appeals on any assignments should be made within 5 business days of the posting of the assignment grade.

EXTRA CREDIT

There are practice tests and a practice final on Courseware. If you take the practice test, then 5% of the highest score you earn will be applied to the relevant test as extra credit on the corresponding exam. You can take the practice tests several times (up to 20 times) and we only take your best score. Pay attention to the “end” dates on these. In general, practice tests end the night before the exam starts (except for PT 1). Practice tests will not be reopened for any reason; make sure you take them on time.

In general, practice tests end before the exam starts (except for PT 1). Your instructor might post a new assignment titled “Practice Test # (NC)” to give you a chance to keep practicing during the testing period. These assignments are not for credit. Any assignment that is titled “... (NC)” will not be counted

COURSE SYLLABUS FOR MATH 2312 PRECALCULUS

toward your grade; “(NC)” stands for “not for credit”. To receive extra credit, students should take the items titled “Practice Test #” before they close.

INSTRUCTIONS FOR QUIZZES

Online quizzes will be given regularly in this course.

- Students need to score 100 on the Course Policy Quiz in order to see the other online assignments.
- The quizzes are located in the CASA CourseWare course website under the “Online Assignments” tab.
- The quizzes will close on the due dates given on CourseWare at 11:59 pm and will not re-open. If the quiz is still open when the time expires, your work will not be saved; you must **submit** any online assignment before 11:59pm.
- Two lowest quizzes will be dropped. The primary reason for this policy is to offset the impact of zero/low quiz scores due to emergencies on a student’s final course grade.
- You have 20 times to take each quiz.
- There is a 60 minute time limit for most quizzes.
- There may be 2 or more quizzes due every week; check the due dates carefully.

Once a quiz closes, then it is over for the semester. Neither I, nor the Math Department, is responsible for any difficulty that you have in accessing the quizzes. Please don’t delay taking quizzes – there are times during the week when CourseWare is slow or overloaded. There is no amnesty period for the quizzes; the quizzes will NOT be reopened at the end of the semester.

Please contact CourseWare tech support directly if you are having problems. The email link is on the CASA homepage.

INSTRUCTIONS FOR HOMEWORK

- There are weekly homework assignments. The homework problems and due dates will be posted on CASA. Some weeks, there might be more than one homework assignment.
- You will submit your answers using “EMCF” tab at CASA before the due date.
- Two of the lowest homework assignment scores will be dropped. The primary reason for this policy is to offset the impact of zero/low HW scores due to emergencies on a student’s final course grade.
- Your score on the homework is the number of correct answers out of the total number of questions.
- Students are expected to check the calendar on CASA often (to see the due dates for HW and quizzes) and to plan ahead and work on the assignments in a timely manner.

COURSE SYLLABUS FOR MATH 2312 PRECALCULUS

INSTRUCTIONS FOR POPPERS (Attendance)

Poppers (attendance questions) will not be given for the first 2 weeks of school to help students adjust to the face to face setting. Attendance/popper policy might be adjusted later in the semester according to UH Policies.

Starting 3rd week of classes, your instructor might assign poppers (attendance questions) during lectures.

Poppers will be turned in under EMCF tab at CASA.

Students will need a device with internet connection (laptop, smart phone, etc.) so that they can turn in poppers during the lecture. If you do not have a device to turn in poppers, see: **Laptop Checkout Requests:** <https://www.uh.edu/infotech/about/planning/off-campus/index.php#do-you-need-a-laptop>

Instructors will explain how the poppers will work in class. They might lock questions as they proceed, last question(s) being due by the end of the lecture; the exact time will be specified by your instructor and will be visible under EMCF tab at CASA. Students who come in late may not be able to turn in questions given earlier in the lecture.

15% of poppers will be dropped to cover for emergencies or unexpected events. For a class that meets 3 times a week, this corresponds to approximately 6 lectures; for a class that meets twice a week, this corresponds to approximately 4 lectures. If you face an absence that exceeds the dropped amount (more than 6 lectures for a MWF class, or more than 4 lectures in a MW or TTh class) and it might be considered an excused absence, read the excused absence policy and contact your instructor.

Sharing answers to popper questions (online, or at group chats, or at any other source) is considered an academic honesty policy violation. Please read the information regarding Academic Honesty below and do not share answers to poppers with your friends. Not only this is cheating; this also prevents other students from learning the material and hence such violations are taken very seriously.

OFFICE HOURS: Office hours will be hold virtually via MS Teams. More information is posted on your CASA class page.

If you need to speak with your instructor privately, email your instructor to arrange a virtual meeting with your instructor.

LATE ASSIGNMENT AND MAKE-UP POLICY

COURSE SYLLABUS FOR MATH 2312 PRECALCULUS

This course is a cumulative course. You as a student need to keep up with the reading, quizzes, homework assignments and exams. Students are expected to check the calendar on CASA several times a week and plan ahead so that they don't miss assignments. We drop some assignments primarily to offset the impact of zero/low scores due to emergencies on a student's final course grade. Hence, students should not expect to have an option to make up missed assignments unless in the case of an excused absence (See: Excused absence policy below).

If you miss a test, it may be possible to reschedule a test appointment during the testing period (depending on space availability) by using the online scheduler. Rescheduling must be made online in your account; your instructor is not responsible for finding seats or making reservations for you. Your final exam score will replace your lowest midterm exam score if the former is higher. (This replacement, if applicable, will occur at the end of the semester after the Letter Grade Calculator (LGC) is turned off. A missed test will result in a score of zero. If you miss two or more exams, only one of those scores will be replaced.) The primary reason for this policy is to offset the impact of zero/low test scores due to emergencies on a student's final course grade.

If requesting make up work (assignment or test) due to an excused absence: the student needs to contact the instructor in writing before the next class meeting (or as soon as possible afterwards with an explanation regarding why the notice could not be sent before the next class meeting). Read the [Undergraduate Excused Absence Policy](#) to see a list of documentations to support your request; follow the guidelines provided on this document to make your request. Your instructor will inform you of the decision in writing (via email).

Note: If students lose access to CASA temporarily due to not entering access code by the deadline, or being temporarily dropped from the course for non-payment, then they are responsible for any assignment deadlines that are missed.

Religious Holy Days: Students whose religious beliefs prohibit class attendance or the completion of specific assignments on designated dates may obtain an excused absence. To do so, please make a written request for an excused absence and submit it to your instructor as soon as possible, to allow the instructor to make arrangements. For more information, see the Student Handbook. <http://catalog.uh.edu/index.php>

COMMUNICATION via EMAIL

Email communications related to this course will be sent to your [Exchange email account](#) which each University of Houston student receives. The Exchange mail server can be accessed via Outlook, which provides a single location for organizing and managing day-to-day information, from email and calendars to contacts and task lists. Exchange email accounts can be accessed by logging into Office 365 with your CougarNet credentials or through Access UH. They can also be configured on [IOS](#) and [Android](#) mobile devices. Additional assistance can be found at the [Get Help](#) page.

Per UH Policy, notices properly addressed and so sent (for example, via PeopleSoft) shall be presumed

COURSE SYLLABUS FOR MATH 2312 PRECALCULUS

to have been received by the student. Thus, you are responsible for the content in emails sent to your UH account, regardless if your external (non-UH) email provider filters or blocks them.

When emailing your instructor, it is recommended that you use a professional email address and include the course name on the subject line so that your instructor can address your questions accordingly.

Please read this link for more on communication via email: [EMAIL ETIQUETTE](https://www.math.uh.edu/~tomforde/Email-Etiquette.html) (<https://www.math.uh.edu/~tomforde/Email-Etiquette.html>).

IMPORTANT: Note that your instructor will communicate with you via email. Your instructor will not reply to chat messages via MS TEAMS outside of class times or office hours. Calls from MS TEAMS will not be responded to unless they are made by appointment. If you leave a voice mail at your instructor's office phone, he/she might not receive it. The best way of communication with your instructor outside of class times is via email.

ACADEMIC HONESTY POLICY

University of Houston students are expected to adhere to the Academic Honesty Policy as described in the UH Undergraduate Catalog. "Academic dishonesty" means employing a method or technique or engaging in conduct in an academic endeavor that contravenes the standards of ethical integrity expected at the University of Houston or by a course instructor to fulfill any and all academic requirements.

Academic dishonesty includes, but is not limited to, the following: *Plagiarism; Cheating and Unauthorized Group Work; Fabrication, Falsification, and Misrepresentation; Stealing and Abuse of Academic Materials; Complicity in Academic Dishonesty; Academic Misconduct*. Refer to [UH Academic Honesty website](#) and the UH Student Catalog for the definition of these terms and university's policy on Academic Dishonesty. Anyone caught cheating will be reported to the department for further disciplinary actions, receive sanctions as explained on these documents, and will have an academic dishonesty record at the Provosts office. The sanctions for confirmed violations of this policy shall be commensurate with the nature of the offense and with the record of the student regarding any previous infractions. Sanctions may include, but are not limited to: a lowered grade, failure on the examination or assignment in question, failure in the course, probation, suspension, or expulsion from the University of Houston, or a combination of these. Students may not receive a W for courses in which they have been found in violation of the Academic Honesty Policy. If a W is received prior to a finding of policy violation, the student will become liable for the Academic Honesty penalty, including F grades.

Posting answers for Poppers or Homework questions online (at group chats or other online tools) is considered an academic honesty violation. Students are expected to know the difference between "getting/giving HELP on a problem" and "getting/giving answers to a problem". If a student is caught sharing answers (in person or online), he/she might be reported to the departmental hearing officer for an academic honesty violation. If a student becomes aware of cheating or any other violations; that student is responsible for informing the instructor.

UH CAPS

COURSE SYLLABUS FOR MATH 2312 PRECALCULUS

Counseling and Psychological Services (CAPS) can help students who are having difficulties managing stress, adjusting to college, or feeling sad and hopeless. You can reach CAPS (www.uh.edu/caps) by calling 713-743-5454 during and after business hours for routine appointments or if you or someone you know is in crisis. No appointment is necessary for the "Let's Talk" program, a drop-in consultation service at convenient locations and hours around campus.

<https://uh.edu/caps/outreach/lets-talk/>

SAC ACCOMMODATIONS

Academic Adjustments/Auxiliary Aids: The University of Houston System complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, pertaining to the provision of reasonable academic adjustments/auxiliary aids for students who have a disability. In accordance with Section 504 and ADA guidelines, University of Houston strives to provide reasonable academic adjustments/auxiliary aids to students who request and require them. If you believe that you have a disability requiring an academic adjustments/auxiliary aid, please visit The Student Accessibility Center website at <https://uh.edu/accessibility/> for more information.

Accommodation Forms: Students seeking academic adjustments/auxiliary aids must, in a timely manner (usually at the beginning of the semester), provide their instructor with a current Student Accommodation Form (SAF) from the SAC office before an approved accommodation can be implemented.

Details of this policy, and the corresponding responsibilities of the student are outlined in The Student Academic Adjustments/Auxiliary Aids Policy (01.D.09) document under [STEP 4: Student Submission (5.4.1 & 5.4.2), Page 6]. For more information please visit the Center for Students with Disabilities FAQs page.

Additionally, if a student is requesting a (SAC approved) testing accommodation, then the student will also complete a Request for Individualized Testing Accommodations (RITA) paper form to arrange for tests to be administered at the SAC office. SAC suggests that the student meet with their instructor during office hours and/or make an appointment to complete the RITA form to ensure confidentiality. Students should bring a copy of their approved SAF form when meeting with the instructor to complete a RITA form.

*Note: RITA forms must be completed at least 48 hours in advance of the original test date. Please consult your counselor ahead of time to ensure that your tests are scheduled in a timely manner. Please keep in mind that if you run over the agreed upon time limit for your exam, you will be penalized in proportion to the amount of extra time taken. Please keep in mind that if you run over the allotted time indicated on your RITA form, then your exam score will be reduced 1 percentage point for each minute over.

COURSE SYLLABUS FOR MATH 2312 PRECALCULUS

Learning Objectives for Precalculus

1. Recognize various kinds of functions (including polynomial, rational, radical, exponential, and logarithmic functions), analyze their behavior, and use the properties of these functions to solve equations and application problems. Recognize that exponential and logarithmic functions are inverses, recall the characteristics of these functions, and solve equations and application problems involving exponential and logarithmic functions. Apply the concepts learned about limits at infinity to aforementioned functions.
2. Recognize and use the vocabulary of angles (including standard position, initial and terminal sides, quadrantal angles, coterminal angles, acute, right, and obtuse angles).
Use degrees and radians to measure angles.
Convert angles from degrees to radians and vice versa.
Compute the length of a circular arc given the radius and the interior angle.
Apply the concepts of linear and angular speed to solve problems concerning motion on a circular path.
3. Use right triangles to evaluate the six trigonometric functions.
State the trigonometric function values for 30° , 45° , 60° . Use right triangle trigonometry to solve application problems that can be visualized using right triangles.
4. Compute the six trigonometric functions of any angle and use the unit circle to define the six trigonometric functions for all real numbers.
Define the trigonometric functions for any angle.
Identify the signs of the trigonometric functions.
Find reference angles and use them to evaluate trigonometric functions.
Identify even and odd trigonometric functions.
5. Know and draw the graphs of the six trigonometric functions and their variations.
Compute the amplitude, period, phase shift, vertical shift, domain, and range of a sinusoidal functions.
Compute the period, domain, range, vertical asymptotes, and x-intercepts of the tangent and cotangent functions. Draw the graphs of $y = \csc x$ and $y = \sec x$; recognize the relationship between the graph of a cosecant function (respectively, secant) and the graph of a sine (respectively, cosine) function.
6. Understand the definitions of the inverse trigonometric functions.
Compute the domain and range of the inverse trigonometric functions.
Evaluate inverse trigonometric functions using a calculator (*optional).
Find exact values of composite functions with inverse trigonometric functions
7. Know and apply identities involving the trigonometric functions.
Use trigonometric identities to simplify expressions and to evaluate the trigonometric functions. Use the trigonometric functions to solve triangles.
Use fundamental trigonometric identities to verify other identities.
Apply the sum and difference formulas for sine, cosine, and tangent.
Apply the double-angle and half-angle formulas for sine, cosine, and tangent.
Apply the Law of Sines and/or the Law of Cosines either to solve triangles.

COURSE SYLLABUS FOR MATH 2312 PRECALCULUS

8. Find all solutions of a trigonometric equation.

Solve trigonometric equations quadratic in form.

Use identities to solve trigonometric equations.

9. Recognize conic sections and their geometric properties.

Differentiate between four conic sections (circle, ellipse, hyperbola, parabola) using the standard and the general form of the equations. Describe the terms center, foci, vertices, and directrix. Graph the conic sections. Solve non-linear systems with two variables using algebra and/or graphing.

10. Recognize and use the vocabulary of vectors (vector, scalar, magnitude, direction) to perform

arithmetic on vectors and to solve application problems. Draw the components of a vector.

Construct a visual representation of scalar multiplication, vector addition, and vector subtraction.

Find the dot product of two vectors; find the angle between two vectors.

Use the dot product to determine if two vectors are orthogonal, parallel, or neither.

Precalculus Topic List

Chapter 4: Trigonometric Functions

Special Right Triangles and Trigonometric Ratios

Radians, Arc Length and the area of a Sector

Unit Circle Trigonometry

Trigonometric Expressions and Identities

Chapter 5: Graphing Trigonometric Functions

Trigonometric Functions of Real numbers

Graphs of the Sine and Cosine Functions

Graphs of the other Trigonometric Functions

Inverse Trigonometric Functions

Chapter 6: Trigonometric Formulas and Equations

Sum and Difference Formulas

The Double-Angle and Half-Angle Formulas

Solving Trigonometric Equations

Chapter 7: Trigonometric Applications

Solving Right Triangles

Area of a Triangle

The Law of Sines and The Law of Cosines

Vectors in the Plane

Chapter 8: Analytic Geometry

Circles

Ellipses

Parabolas

COURSE SYLLABUS FOR MATH 2312 PRECALCULUS

Hyperbolas
Systems

Algebra Review: Functions

Methods of Combining Functions

Inverse Functions

Polynomial and Rational Functions

Exponential Functions and Exponential Equations

Logarithmic Functions and Logarithmic Equations