## COURSE SYLLABUS

## YEAR COURSE OFFERED: <br> 2017-2018

SEMESTER COURSE OFFERED: Spring

DEPARTMENT:
MATH

COURSE NUMBER:
1330 (This information applies to all sections)

NAME OF COURSE:
Precalculus

NAME OF INSTRUCTOR: Rebecca George (www.math.uh.edu/~bekki)
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The information contained in this class syllabus is subject to change without notice. Students are expected to be aware of any additional course policies presented by the instructor during the course.

Instructor information:

- Instructor: Rebecca George
- Office: 218C PGH
- Office/conference Hours: TTh 2-3:30pm
- Email: bekki@math.uh.edu

PREREQUISITES: MATH 1310: College Algebra or a passing score on the test for placement out of College Algebra.

Math 1330 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 1330 is not required for your major (as a prerequisite for another course), please take Math 1311 and Math 2311 as your core and reasoning.
*if you have calculator use on a SAF form, please take Math 1311 and Math 2311.

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## TEXTBOOK

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 at the UH Book Store to access the learning materials by the end of the second week of school.

The information contained in this class outline is an abbreviated description of the course. Additional important information is contained in the departmental policies statement at http://www.mathematics.uh.edu/undergraduate/courses/math $13 \mathrm{xx} /$ and at your instructor's personal webpage. You are responsible for knowing all of this information. Note that some 13 xx policies do not apply to 1330 (for instance; no exemption/opt-out from the final in Math 1330).

The instructor reserves the right to make changes on these policies. Any changes will be announced on the course website in a timely manner.

## 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.

## ASSESMENTS

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

1. Course Policy Quiz - online on your CASA account - you must make $\mathbf{1 0 0 \%}$ on the course policy quiz in order to have access to the other online assignments in the course. The answers to the quiz may be found in the "Math 13xx Course Policies" document on your instructor's website.
2. 4 Regular Exams
3. Final Exam
4. Online Quizzes
5. Homework
6. Poppers - in-class quizzes given daily starting the $3^{\text {rd }}$ week of classes.

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## Components and Weights of Semester Assignments:

Test $1 \quad 5 \%$
Test $2 \quad 15 \%$
Test 3 15\%
Test $4 \quad 15 \%$
Final Exam 20\%
Homework 8\%
Poppers 10\%
Online Quizzes 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 | $93 \leq \mathrm{x}$ | B- | $80 \leq \mathrm{x}<83$ | D+ | $67 \leq \mathrm{x}<70$ |
| :--- | :---: | :--- | :---: | :--- | :---: |
| A- | $90 \leq \mathrm{x}<93$ | C+ | $77 \leq \mathrm{x}<80$ | D | $63 \leq \mathrm{x}<67$ |
| B+ | $87 \leq \mathrm{x}<90$ | C | $73 \leq \mathrm{x}<77$ | D- | $60 \leq \mathrm{x}<63$ |
| B | $83 \leq \mathrm{x}<87$ | C- | $70 \leq \mathrm{x}<73$ | F | below 60 |

## EXAM INFORMATION

There will be 4 tests along with a mandatory final exam.
Test 1 is an online test over the pre-requisite material (algebra). You can find it under online assignments tab at CASA. You have 2 attempts; we take your best score. 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.

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 $\mathbf{1 3 3 0}$ students; you can add a workshop in your PS account before the last day to add.

The remaining tests (Tests 2, 3, 4 and final) are taken at CASA testing center, with reservation. Use "proctored exams" tab at your CASA account to reserve a seat for it.

To see the exam dates and topics covered, please visit course website. You must make a reservation to take a test prior to the first testing day. You should print out the web page showing your reservation

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time for your records and proof of your reservation. Reservation generally begins 2 weeks prior to an exam; reserve a seat as soon as the scheduler opens up.

Tests are 50 minutes long. Push the "submit" button when you're completely ready to leave the Testing Center, AFTER you've finished ALL the questions and checked your work.

If you miss a test, you receive a zero for it. When you take the final, the grade on the final will replace that zero. If you miss more than one test, only the first one will be replaced.
There are no retakes or makeups in this class.
You can NOT use calculators during any of the exams; study accordingly.

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 | $1 / 16-1 / 27$ |
| :--- | :--- | :--- |
| Test 2 | Chapter 4 | $2 / 20-2 / 24$ |
| Test 3 | Chapter 5, 6.1, 6.2 | $3 / 24-3 / 28$ |
| Test 4 | 6.3, Chapter 7, Vectors | $4 / 17-4 / 21$ |
| Final | Comprehensive (covers all chapters) | $5 / 3-5 / 10$ |

## Final Exam:

Final is comprehensive and mandatory for ALL students. There is no "exemption" or "opt-out" from the final in Math 1330. No make-ups/no excuses. NO EARLY FINALS.
Check course website for final exam schedule. Final is given at CASA testing center. Reserve a seat for it when reservation begins. Your raw score on the final will be used to replace the lowest test score if it is better.

## EXTRA CREDIT

There are practice tests and a practice final on Courseware. If you take the practice test, then $10 \%$ 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. None of the practice tests will ever be re-opened.

## INSTRUCTIONS FOR QUIZZES

Online quizzes will be given regularly in this course.

- 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.


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- One of the lowest quizzes will be dropped.
- 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.

There will be no makeup quizzes for any reason. 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. If you miss a quiz, you will NOT have a chance to make up for it.
Please contact CourseWare tech support directly if you are having problems. The email link is on the CASA homepage.

## INSTRUCTIONS FOR POPPERS

- For each lecture starting on the third week of classes you will be asked a series of problems that will have to do with the lecture.
- The forms are for sale at the BOOK STORE. Please buy the package for Math 1330 with your section number printed on it. You must use the right popper forms for credit; you can't turn in your answers on any other kind of paper.
- You are required to fill in your id number, popper number and blacken the correct circles. Make sure that your id number and popper number are correct before turning in the popper at the end of the lecture. If these are not filled out correctly or if the darken circles are too light you will not get credit for that day's lecture even if you attended.
- The total number of questions for the course will be counted, $85 \%$ of the total number of questions will be the $100 \%$. For example, if there are 5 questions each class for 24 classes, which is 120 questions. Your grade will be calculated out of $120(.85)=102$ points.
- There will be no make-up Poppers.

If your popper is not graded even though you turned it in, that means you've made a bubbling mistake and there is nothing we can do about it, you will not receive credit for such poppers.

## INSTRUCTIONS FOR HOMEWORK

- There are weekly homework assignments. The homework problems and due dates will be posted on CASA.
- You will submit your answers using "EMCF" tab at CASA before the due date.
- Two of the lowest homework assignment scores will be dropped.
- No late homework; no make ups on the homework.
- Your score on the homework is the number of correct answers out of the total number of questions.


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## LATE ASSIGNMENT AND MAKE-UP POLICY

This course is a cumulative course. You as a student need to keep up with the reading, quizzes, homework assignments and exams. Thus, late work or make-ups will not be accepted for any reason. In case of late enrollment or re-registration after being dropped: No make ups will be provided for assignments missed during the "no access to the course" period due to late enrollment or being dropped. Similarly, if students lose access to CASA for not entering access code by the deadline, there will be no make ups for the assignments they missed during that period.

## COMMUNICATION via EMAIL

Your instructor will be sending class emails using PeopleSoft; you are responsible for checking your UH email. Per UH Policy, notices properly addressed and so sent (for example, via PeopleSoft) shall be presumed 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).

## HONOR PRINCIPLE

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 receive sanctions as explained on these documents and will be reported to the department for further disciplinary action. 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.

## UH CAPS

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

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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.
http://www.uh.edu/caps/outreach/lets talk.html

## CSD 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 Center for Students with DisABILITIES (CSD) website at http://www.uh.edu/csd/ 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 CSD 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 (CSD 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 CSD office. CSD 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.

## 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 afore mentioned 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).

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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 $30^{\circ}, 45^{\circ}, 60^{\circ}$. 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.
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.

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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

Algebra Review: Functions
Methods of Combining Functions
Inverse Functions
Polynomial and Rational Functions
Exponential Functions
Logarithmic Functions
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
Hyperbolas

