

Pre-calculus: Trigonometric Functions and Complex Numbers

Math 0006, Winter 2020

Instructor - Gennady Shaikhet

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- **Office hours:** Tuesday 10:00 -11:30, or by appointment

Course overview

Angles and the unit circle; Radian measures; Definitions of trigonometric functions; Analytic trigonometry; Graphs, inverse trigonometric functions; Trigonometric equations; Complex numbers; Polar coordinates.

Prerequisites

Grade 11 Functions, or MATH 0005, or equivalent. **It is essential to meet the requirements!**

Course structure & schedule (important!)

The course will combine online lectures and traditional classroom meetings.

-- On Week 1, we meet on Wednesday and Friday, 11:35 am – 12:55 pm, at Southam Hall, 316.

-- Starting from Week 2, we will have

- **Online lecture:** a mandatory lecture, with mandatory exercises, on CULearn, usually open from Monday, to be completed before Friday's class.
- **Class:** on Fridays 11:35 am – 12:55 pm, at Southam Hall, 316. Each class, **except Feb 14, and March 27**, will start with a short quiz (~ 20 minutes) checking your understanding of the material you've studied online. All quizzes will be marked. We will then review the quiz questions, and practice more material, by solving problems on the chalkboard. On **Feb 14** and **March 27**, there will be in-class tests: **Test 1** and **Test 2** (see the course outline below).
- **Tutorial:** Friday, 1:35 pm – 2:25 pm, at University Centre, 279. Here, students will have more practice, this time solving the questions themselves, under the TA's guidance.

Textbooks – there is no particular textbook. In addition to online lecture slides, the following **free** book is a good reference: **Trigonometry**, by Michael Corral (downloadable at <http://www.mecmath.net/trig>)

Course grade policy

The course grade is composed of term performance (50%) and final exam (50%).

- **Term performance** is composed of
 - 1) Two in-class tests ($2 \times 15\% = 30\%$) + nine short in-class quizzes (10%), - see the course outline below, for all the test dates;
 - 2) Tutorial participation (10%);
- **Final exam:** a 3-hour written exam (scheduled by the University) will be given during the official examination period.
- **Homework:** a large list of exercises will be provided weekly. These exercises are not to be handed in and will not be graded. However, to succeed in the course, it is absolutely essential to do exercises on a regular basis.

For your attention

- Please be aware of the **Math Tutorial Centre** located at 3422 HP. For more information, TA schedules etc. go to: <http://www5.carleton.ca/math/math-tutorial-centre/>
- Students must respect the principles of academic integrity. For the university policy see: <https://carleton.ca/secretariat/wp-content/uploads/Academic-Integrity-Policy.pdf>
- Only **basic** (no smartphones, no-programmable, etc.) **calculators** are allowed for tests and for the final exam.
- It is each student's responsibility to be available at the time of the examination. In particular, no travel plans should be made until the examination schedule is published. It is each student's responsibility to find out the correct date and time of the exam and the room where it takes place.
- Students who miss the examination may be eligible for a deferred exam. Application for a deferral must be made, with appropriate documentation, to the Registrar's Office.
- Students wishing to see their examination papers must make an appointment with the instructor within two weeks of the examination. Kindly note that this is a privilege for students to learn where they went wrong, not an opportunity to argue about the marking.

Course Outline for Winter 2020

Week	Tests	Sec &	Tentative list of topics
1		1.1-1.2, 4.1	Angles; Radian and Degree measure; Trigonometric functions of acute angles; Multiplies of 30° , 45°
2	Quiz 1 * - Jan 17	1.3-1.4	Solving right triangles; Trigonometric functions of any angle;
3	Quiz 2 - Jan 24	1.5, 3.1	Basic trigonometric identities; Rotations and reflections of angles; Verification of identities
4	Quiz 3 - Jan 31	3.2	Sum and difference identities;
5	Quiz 4 - Feb 7	3.3	Double-angle and half-angle
6	Test 1 @ Feb, 14 (Lecture time and place)	3.4 5.1	Other identities, product-to-sum, sum-to-product; Graphing the trigonometric functions;
7	Quiz 5 - Feb 28	5.2	Properties of graphs
8	Quiz 6 - Mar 6	5.3	Inverse trigonometric functions
9	Quiz 7 - Mar 13	6.1	Trigonometric equations
10	Quiz 8 - Mar 20	6.1-6.2	Trigonometric Equations (cont.), Numerical methods
11	Test 2 Mar, 27 (Lecture time and place)	6.3	Complex Numbers
12	Quiz 9 - Apr 3	6.4	Polar Coordinates, Review

& - Section numbers correspond to Corral's book **Trigonometry**, (downloadable at <http://www.mecmath.net/trig>)

* In-class quizzes are held in the first 20 minutes of a lecture, on every Friday – **don't be late!**

@ There will be no make-up tests. **Mark your calendars and try not to miss the tests!** In case you are not able to write either of Test 1 or Test 2 (or both), their weight will be shifted towards the final exam.

Academic Accommodations for Students with Disabilities

The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at **613-520-6608** or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send the instructor your ***Letter of Accommodation*** at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation. After requesting accommodation from PMC, meet with the instructor to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally scheduled exam.