

This is a traditional syllabus, based on a face-to-face course. Much doesn't apply to Spring, 2021, what with COVID-19 and all, but you get a sense of what the *usual* expectations are. WebAssign homework doesn't give you the personally-graded, hand-written homework and tests that you would ordinarily receive. I think this is important training, but it's just not practical, inasmuch as this is a *Remote* section, and I can't expect people to visit campus every day to drop off and pick up homework.

As things loosen up, I would like to at *least* implement in-person, traditional tests, graded with partial credit, by hand. Regardless, I have copious hand-written solutions that I will make available, so you at least have an example of what I'm looking for. Those solutions are still a bit more cramped than I would prefer, because they were for mass distribution, so I tried to save a little paper, which is *generally* a foolish thing for a math student to do.

**CLASS MEETS:** 8:15 - 9:30 a.m., TR

**INSTRUCTOR:** Dr. Harry S. (Steve) Mills

**OFFICE:** EDBH 134K

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### **MAT 122 is a Guaranteed Transfer (GT-MA1) Course:**

The Colorado Commission on Higher Education has approved MAT 1 for inclusion in the Guaranteed Transfer (GT) Pathways program in the GT-MA1 category. For transferring students, successful completion a minimum C– grade guarantees transfer and application of credit in this GT Pathways category. For more information on the GT Pathways program, go to <http://highered.colorado.gov/academics/transfers/gtpathways/curriculum.html>.

### Course Criteria for GT-MA1:

Students should be able to:

- Demonstrate good problem-solving habits, including:
  - o Estimating solutions and recognizing unreasonable results.
  - o Considering a variety of approaches to a given problem, and selecting one that is appropriate.
  - o Interpreting solutions correctly.
- Generate and interpret symbolic, graphical, numerical, and verbal (written or oral) representations of mathematical ideas.
- Communicate mathematical ideas in written and/or oral form using appropriate mathematical language, notation, and style.
- Apply mathematical concepts, procedures, and techniques appropriate to the course.
- Recognize and apply patterns or mathematical structure.
- Utilize and integrate appropriate technology.

**Standard Policies and Services:** Please see the [Aims Standard Syllabus Policies](http://www.aims.edu/policies/standard-syllabus/) (<http://www.aims.edu/policies/standard-syllabus/>). This is where you and I go, in special or extraordinary circumstances, when extra guidance is needed on college policy.

Students who are *honest, and show common courtesy and common sense*, will never have to go to the Standard Syllabus's [Student Conduct section](#). If you have a [documentable disability](#), you really want to check out [what our Disability Services Office has to offer](#).

**CATALOG DESCRIPTION:** Covers topics including trigonometric functions (with graphs and inverse functions), identities and equations, solutions of triangles, complex numbers, and other topics as time permits.

This is a traditional prerequisite course to the calculus sequence. This course is a state guaranteed transfer course GT-MA1. Prerequisite(s): MAT 121 or higher, all with grade of C or better, or assessment. Three credits.

## MATERIALS:

**1. Textbook:** Trigonometry, by Larson, 10th Edition, ISBN 978-1-337-27846-1

I think you'll be fine with a cheap, used 9<sup>th</sup> Edition, or even another textbook, so long as you register and pay for the WebAssign

Student Sol'ns Manual (Optional), ISBN: 9781133954293

Some students swear by Student Solutions. Others use online or other forms of assistance, for instance, [my videos](#).

**2. Scientific Calculator:** It should display the expression before you enter it, and let you scroll back and edit expressions you've already entered. The TI-30X IIS (ti-30x iis) is graphing calculators are *prohibited* on quizzes and tests. Cell phone calculators are *prohibited* on quizzes and tests. But for homework and explorations, *some* kind of electronic graphing capability, such as graphing calculator, 'phone app, or online resource, such as [Wolfram Alpha](#).

**4. Trigonometry Videos:** Most of the homework exercises are presented in video. I'm hoping you use the heck out of them, OUTside of class. so that when we're IN class, we WORK together. In the first week, I do more old-school right-angle trigonometry ideas, and depart from the book quite a bit. This means lecturing more than I want to. After Week 1, I want the "lecture" to be in the videos, and the individualized help to be in the live ZOOM sessions.

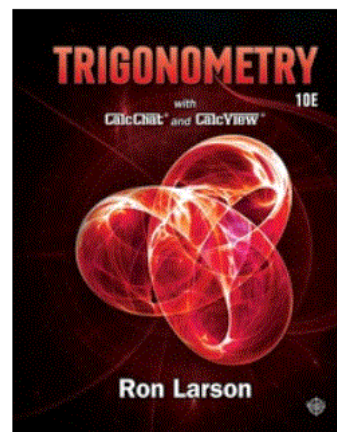
I also present a version of each test in the videos. *These are not as applicable for this semester's REMOTE designation. We will be testing online, using the same WebAssign system that we're using for the homework.* Still, the old tests can give you a summary of the chapter from the instructor's point of view.

**5. Old Tests:** Other old tests can be found by surfing <http://harryzaims.com/122/>. These are traditional, hand-written tests. We're not doing those, this semester. The tests will be administered on WebAssign.

**6.** Bringing a laptop or other device to class is probably more important than bringing the book! And it's essential to access the resources I've spent years building for this course.

## LEARNING OUTCOMES:

1. Acquire an understanding of trigonometric vocabulary. (Reading I)
2. Measure angles in degrees and radians.
3. Calculate the values of trigonometric functions of acute angles using right triangles.
4. Evaluate trigonometric functions for general angles.
5. Use reference angles to evaluate trigonometric functions.
6. Construct the graphs of the trigonometric functions.
7. Read and interpret angular and linear velocity type problems. (Reading III, Writing II)
8. Read, interpret, and use a drawing to solve survey type problems. (Reading III, Writing II)



9. Recall and apply the reciprocal, quotient, Pythagorean, and even-odd identities to simplify expressions.
10. Use the fundamental identities to verify trigonometric identities.
11. Employ the formulas for sums and differences to find exact values of the trigonometric functions for selected angles, and to simplify expressions.
12. Derive and use the double-angle and half-angle formulas.
13. Use the product and sum formulas, and graph combinations of sine and cosine functions.
14. Describe the relationship between the trigonometric functions and their inverses. (S/L II)
15. Calculate solutions for trigonometric equations with variable side conditions.
16. Solve right triangles.
17. Use the law of sines to solve a general triangle, including the ambiguous case."
18. Use the law of cosines to solve a general triangle.

**Grades:**

**Homework:** 20% - **Homework will be administered on WebAssign.** The homework videos on [harryzaims.com](http://harryzaims.com) are based on the WebAssign. So, find the exercise you're struggling with in the notes and if that's not enough, go to the video that corresponds to that exercise. We have and will continue to point this out in lecture.

You will quickly learn to navigate [harryzaims.com](http://harryzaims.com), and I hope and expect you will find the resources, there, make your work more effective and efficient.

Homework is a *learning* tool. I'm more concerned about how you're writing it up, than I am about answers, which I *give away*. If you're incapable of comparing *your* work to the solutions, and realize you're doing it wrong, I may not pick up on it until the test. I will have a grader looking at your work, in some detail, but I'm mainly looking for *a* number next to your name in that column, rather than what that number is. The homework says you have discipline. The test says you use the homework to become *competent*. And I'm all about competence.

I don't want you wasting time, staying up 'til midnight to get that one problem right. Instead, you can go to the [Trigonometry Videos](#) and watch the video for that exercise *or* just look at the notes that go with the videos, without watching the video, itself. The quickest way to find something is in the notes. The notes point you to the corresponding video, for max efficiency. Many students will just slurp up every video (recommended), because they contain virtually everything I have to say on the concepts.

I require unlined (cheap copier/computer-printer), 8 ½ " x 11 " paper. I'm looking for context of the question, and a clear, convincing presentation of the exercises. Your work is a report on what's asked, and how you worked it. Think as though you're trying to explain what's going on to someone a little bit behind where *you* are, and all they have to work with is your homework, and nothing else.

This is easier than you think. It's just a couple style things and making sure the context of the question are covered. The homework is your training for the test. It will be your primary reference, studying for tests. If you write it the way I want, you won't have to do much studying, right before the test. You'll be doing your prep, a little bit at a time, every day, which is the best way for self-improvement. And if you do need review, well-written homework, by *you*, is your best resource.

**Attendance:** 10% - A student who does their work and turns everything in on time will generally get a 'pass' on physical attendance. But if you miss class and the homework isn't flowing in on schedule, I will be strict.

This is a flipped class, so to a great extent, I'll be trying to stay out of your way, while you work at your own pace, or with others, when we're face-to-face. You will be getting much of the lecture outside of class, on

video, so I generally will want to give you back some of that time to just work, during scheduled class time, with open access to a tutor who knows the stuff better than anybody in the math lab (me).

It's also easier, somehow, to make time for homework, when you have that set time and place, where others are doing the same thing. I encourage working with others, but don't require it.

**Tests:** 70% - Here's where most of the points are. But the learning takes place in the homework. Drop one test.

**Makeup Tests:** These are tough to qualify for. Listed in likelihood of makeup: Documented illness, family emergencies, funeral/wedding obligations, car trouble. In all cases, the better you can document it, the more likely I will be to grant a makeup. Otherwise, just make the missed test the one grade that I drop.