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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:
  - Estimating solutions and recognizing unreasonable results.
  - Considering a variety of approaches to a given problem, and selecting one that is appropriate.
  - 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.

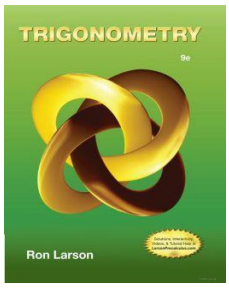
Standard Policies and Services: Please see the Aims Standard Syllabus Policies (http://www.aims.edu/inside/policies/standard-syllabus/). This is where you and I go, in special or extraordinary circumstances, when extra guidance is needed on college policy. This helps us to keep this MAT 121 Syllabus on MAT 121.

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, 9th Edition, ISBN 9781133954330



Brand-new, shrink-wrapped book comes with WebAssign ID, for free access to their resources, which include videos and other learning resources.

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

Some students swear by these. Others use online or other forms of assistance.

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.

3. **WebAssign: (Optional)**. http://www.webassign.net/ Course Key: aims 3228 0104

This comes, free, with brand-new, shrink-wrapped text. It can also be purchased, separately, to accompany a used book, or in *place* of a wood-based book, entirely. It contains all the assignments, with many learning resources. Some students use this, extensively. Some not at all! All should take a look at it, during a free trial period, and decide for themselves if it works for them.

My main concern about the WebAssign is you might not pick up on some of the things I emphasize/de-emphasize, that will only be found in my videos, which are provided to supplement face-to-face lecture. A student who wants to *know* what I'm looking for, watching all of my videos is highly recommended.

One of WebAssign's main selling points is there is extra, on-demand help available. It's also a nice resource for extra practice problems with instant feedback.

One of its drawbacks is they don't always give you the slickest or easiest way to work or remember how to do something, because they're trying to be formal, or – sometimes – they're just not very good at breaking it down. On the other hand, some really respond to their methods.

4. **Trigonometry Videos:** I present the material in brief, homework-problem-based videos. There are accompanying notes that are transcripts of the video presentation. Everything I write "on the board" is in those notes.

I also present a version of each test in these videos

5. Old Tests: Last semester's tests. Other old tests can be found by browsing http://harryzaims.com/122/ .

Blog: We may use the Aims Online Discussion tool, for this. Maybe we'll just *start* with a "Get Acquainted Discussion," and decide, from there, where we want to put whatever discussion(s) we want. But only if we want. The Discussion Tool on Aims Online is kind of clunky, and you guys might want a better app or start up a YouTube channel, or ... I'm happy to work with you to set something up, but only if and when you guys want. Nothing mandatory.

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 is a *learning* tool. I'm more concerned about how you're writing it up, than I am about answers, which I *give away*. This keeps you from 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 will 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 the 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.

Board Work: 10% - I will require you present at least 5 problems on the board during the semester. Some students will really *like* this and go to the board with problems they want to discuss face-to-face. Some won't, and that's fine. You just need to strap it on 5 times, which is about once every 3 weeks. This is meant as a learning opportunity more than a punitive thing.

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.

On relatively rare occasions, I will do a full-on live lecture. Students say they like these, but I think part of the appeal is it's a change of pace, and I'm a pretty funny (looking) guy. But there are definitely some in-class, hands-on things I want us to do, together, especially the first week or two of class.

Tests: 60% - Here's where the points are