MTH 112: Elementary Functions

Catalog Description: Triangle trigonometry, circular functions and graphs, trigonometric equations and identities, inverse trigonometric functions, polar coordinates, vectors and applications.

Credits: 4

Terms Offered: F, W, S, Su

Enforced Prerequisites: MTH 111 with C- or better, or ALEKS math placement test: 60%, or math placement test: 24, or instructor permission.

Meetings: Three 50-minute lectures and one 80-minute recitation

Course Content:
1. Triangle trigonometry
2. Circular functions and graphs
3. Trigonometric equations and identities
4. Inverse trigonometric functions
5. Polar coordinates
6. Vectors and applications

MTH 112 Measurable Student Learning Outcomes: A successful student in MTH 112 will be able to:

• Apply the trigonometry of right triangles to relevant problems
• Model with trigonometric functions and model with inverse trigonometric functions
• Use trigonometric identities to simplify expressions
• Solve equations involving trigonometric functions
• Make use of the Law of Sines and the Law of Cosines to solve problems related to oblique triangles
• Formulate and solve problems using vectors, parametric equations, and the polar coordinate system.

MTH 112 satisfies the Baccalaureate Core Skills category for Mathematics and successful completion of the Mathematics category is one of OSU’s First Year Skills requirements.

Baccalaureate Core Learning Outcomes:

1. Identify situations that can be modeled mathematically.
2. Calculate and/or estimate the relevant variables and relations in a mathematical setting.
3. Critique the applicability of a mathematical approach or the validity of a mathematical conclusion.

Evaluation of Student Performance: Your grade and measurement of your progress on the course outcomes will be based on weekly online homework, written homework, and in-class activities (such as clicker problems or small-group written problem solving), along with two written midterms and final exam. (Approximate percentages given.)

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Online Homework</td>
<td>20%</td>
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<tr>
<td>Written Homework</td>
<td>7%</td>
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<tr>
<td>In-class activities</td>
<td>8%</td>
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<tr>
<td>Two Midterms</td>
<td>40%</td>
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<td>Final Exam</td>
<td>25%</td>
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Learning Resources: The required text is *Algebra and Trigonometry with Modeling and Visualizations*, by Gary K. Rockswold (2010, Fourth Custom Edition for Oregon State University) with MyMathLab access code, or other similar text selected by department. TurningPoint Clicker, scientific or graphing calculator.
Selected portions of the text will be covered as follows.

Chapter 6: 6.1, 6.2, 6.3, 6.4, 6.5, and 6.6
Chapter 7: 7.1, 7.2, 7.3, 7.4, and 7.5
Chapter 8: 8.1, 8.2, and some of 8.3, 8.4 and 8.5

**Students With Disabilities:** Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through DAS should contact DAS immediately at 737-4098.

**Academic Honesty and Student Conduct:** Students are expected to be familiar with the Homework and Exam policies stated in this syllabus, as well as Oregon State University's Student Conduct Code. [http://oregonstate.edu/studentconduct/code/index.php](http://oregonstate.edu/studentconduct/code/index.php).