

Clackamas Community College

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Section #1 General Course Information**Department:**Mathematics**Submitter**

First Name: Mark

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Course Prefix and Number:MTH - 112

Credits:5**Contact hours**

Lecture (# of hours): 55

Lec/lab (# of hours):

Lab (# of hours):

Total course hours: 55

For each credit, the student will be expected to spend, on average, 3 hours per week in combination of in-class and out-of-class activity.

Course Title:Trigonometry and Pre-Calculus**Course Description:**

A transfer course designed to prepare students for calculus. AMATYC standards-based approach utilizing the rule of four to analyze elementary functions and applications is used for this course. The rule of four requires that each topic should be presented symbolically, graphically, numerically, and verbally. Topics include trigonometric functions, trigonometry developed from the unit circle, right triangle trigonometry, inverse trigonometric functions, the laws of sines and cosines, trigonometric identities, and conic sections. Students will also learn to use vectors, polar equations, and parametric equations. Particular attention will be paid to modeling applications and solving mathematical problems.

Type of Course:Lower Division Collegiate

Is this class challengeable?

Yes

Can this course be repeated for credit in a degree?

No

Is general education certification being sought at this time?

Yes

Check which General Education requirement:

✓ Mathematics

Is this course part of an AAS or related certificate of completion?

No

Are there prerequisites to this course?

Yes

Pre-reqs:MTH-111 with a C or better or placement in MTH-112

Have you consulted with the appropriate chair if the pre-req is in another program?

No

Are there corequisites to this course?

No

Are there any requirements or recommendations for students taken this course?

Yes

Recommendations:Pass RD-090 or placement in RD-115, pass WR-095 or placement in WR-121

Requirements:None

Are there similar courses existing in other programs or disciplines at CCC?

No

Will this class use library resources?

No

Is there any other potential impact on another department?

No

Does this course belong on the Related Instruction list?

Yes

Area:Computation

GRADING METHOD:

A-F or Pass/No Pass

Audit:Yes

When do you plan to offer this course?

- ✓ **Summer**
- ✓ **Fall**
- ✓ **Winter**
- ✓ **Spring**

Is this course equivalent to another?

If yes, they must have the same description and outcomes.

No

Will this course appear in the college catalog?

Yes

Will this course appear in the schedule?

Yes

Student Learning Outcomes:

Upon successful completion of this course, students should be able to:

1. define and identify trigonometric functions,
2. convert between radian measure and degrees,
3. use radian measure to compute the length of an arc,
4. compute the value of trigonometric function for particular angles in a right triangle,
5. evaluate the sine and cosine functions for particular angles on the unit circle from memory,
6. define sine and cosine functions based on the unit circle,
7. demonstrate the ability to graph, transform, and analyze the graphs of sine and cosine functions;
8. write tangent, secant, cosecant, and cotangent functions in terms of sine and cosine functions;
9. use the trigonometric identities and inverse trigonometric functions appropriately to solve mathematical problems in cross discipline applications,
10. demonstrate the ability to verify trigonometric identities,
11. use the laws of sines and cosines to solve mathematical problems within cross discipline applications,
12. demonstrate the ability to recognize, model, and solve cross discipline applications using trigonometry;
13. demonstrate the ability to perform vector arithmetic,
14. use vectors to model cross discipline applications and solve mathematical problems,
15. use parametric equations to describe curves within solve cross discipline applications,
16. convert between Cartesian and polar coordinates,
17. use polar equations to describe curves,
18. recognize, and solve mathematical problems within cross discipline applications with polar equations,
19. demonstrate the ability to graph and translate graphs of Parabolic, Elliptic, and Hyperbolic functions;

20. use technology to solve problems,
 21. use technology to fit functions to data sets,
 22. demonstrate rigorous and analytical thinking by reading, writing, and utilizing the technical and logical language and symbolism necessary to do mathematics effectively and efficiently;
 23. demonstrate the ability to work effectively as a team member to engage in using pre-calculus concepts to solve mathematical problems.
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**AAOT/ASOT GENERAL EDUCATION OUTCOMES
COURSE OUTLINE MAPPING CHART**

Mark outcomes addressed by the course:

- Mark "C" if this course completely addresses the outcome. Students who successfully complete this course are likely to have attained this learning outcome.
- Mark "S" if this course substantially addresses the outcome. More than one course is required for the outcome to be completely addressed. Students who successfully complete all of the required courses are likely to have attained this learning outcome.
- Mark "P" if this course partially addresses the outcome. Students will have been exposed to the outcome as part of the class, but the class is not a primary means for attaining the outcome and assessment for general education purposes may not be necessary.

As a result of completing the AAOT/ASOT general education requirements, students will be able to:

WR: Writing Outcomes

1. Read actively, think critically, and write purposefully and capably for academic and, in some cases, professional audiences.
2. Locate, evaluate, and ethically utilize information to communicate effectively.
3. Demonstrate appropriate reasoning in response to complex issues.

SP: Speech/Oral Communication Outcomes

1. Engage in ethical communication processes that accomplish goals.
2. Respond to the needs of diverse audiences and contexts.
3. Build and manage relationships.

MA: Mathematics Outcomes:

- C** 1. Use appropriate mathematics to solve problems.
- C** 2. Recognize which mathematical concepts are applicable to a scenario, apply appropriate mathematics and technology in its analysis, and then accurately interpret, validate, and communicate the results.

AL: Arts and Letters Outcomes

1. Interpret and engage in the Arts & Letters, making use of the creative process to enrich the quality of life.
2. Critically analyze values and ethics within range of human experience and expression to engage more fully in local and global issues.

SS: Social Science Outcomes

1. Apply analytical skills to social phenomena in order to understand human behavior.
2. Apply knowledge and experience to foster personal growth and better appreciate the diverse social world in which we live.

SC: Science or Computer Science Outcomes

1. Gather, comprehend, and communicate scientific and technical information in order to explore ideas, models, and solutions and generate further questions.
2. Apply scientific and technical modes of inquiry, individually, and collaboratively, to critically examine the influence of scientific and technical knowledge on human society and the environment.

3. Assess the strengths and weaknesses of scientific studies and critically examine the influence of scientific and technical knowledge on human society and the environment.

Outcomes Assessment Strategies:

:

Major Topic Outline:

1. Periodic functions.
2. Sine and cosine functions.
3. Remaining trigonometric functions.
4. Right triangle trigonometry.
5. Inverse trigonometric functions.
6. Laws of sines and cosines.
7. Trigonometric identities.
8. Vectors.
9. Vector arithmetic.
10. Parametric equations.
11. Polar equations.
12. Conic sections.

Does the content of this class relate to job skills in any of the following areas:

- | | |
|--------------------------------------|-----------|
| 1. Increased energy efficiency | No |
| 2. Produce renewable energy | No |
| 3. Prevent environmental degradation | No |
| 4. Clean up natural environment | No |
| 5. Supports green services | No |

Percent of course:0%

Section #2 Course Transferability

Concern over students taking many courses that do not have a high transfer value has led to increasing attention to the transferability of LDC courses. The state currently requires us to certify that at least one OUS school will accept a new LDC course in transfer. Faculty should communicate with colleagues at one or more OUS schools to ascertain how the course will transfer by answering these questions.

1. Is there an equivalent lower division course at the University?
2. Will a department accept the course for its major or minor requirements?
3. Will the course be accepted as part of the University's distribution requirements?

If a course transfers as an elective only, it may still be accepted or approved as an LDC course, depending on the nature of the course, though it will likely not be eligible for Gen Ed status.

Which OUS schools will the course transfer to? (Check all that apply)

Identify comparable course(s) at OUS school(s)

How does it transfer? (Check all that apply)

:

Provide evidence of transferability: (minimum one, more preferred)

First term to be offered:

Next available term after approval

:
