

16. Proposed semester and year of first offering? fall semester 2007 year
17. Maximum enrollment 30 Rationale, if applicable
18. Special scheduling considerations? yes x no If yes, explain.
19. Special fees required? yes X no If yes, explain.
20. Will this request require special resources (personnel, supplies, etc.?) yes x no
If yes, explain.
21. Is this course restricted to particular room type? yes x no If yes, explain.
22. What method of delivery is appropriate for this course?
x traditional x HITS (interactive TV) x cable x on-line x any of these
other, explain
23. X Course fulfills requirement for Quantative Reasoning for AA program/degree
Course is an elective for _____ program/degree
Course is elective for AA degree
24. This course increases decreases x makes no change in number of credit required
for the program(s) affected by this action
25. Is this course taught at another UH campus? x yes no
a. If yes, specify campus, course, alpha and number Math 140 Trigonometry and Analytic
Geometry for all UHCC Campuses
b. If no, explain why this course is offered at MCC
26. a. Course is articulated at
X UHCC X UH Manoa UH Hilo UH WO Other/PCC
b. Course is appropriate for articulation at
UHCC UH Manoa UH Hilo UH WO Other/PCC
c. Course is not appropriate for articulation at
UHCC UH Manoa UH Hilo UH WO Other/PCC
d. Course articulation information is attached? yes no

Proposed by

[Signature]
Author or Program Coordinator/Date

Approved by

[Signature] 1/23/07
Academic Senate Chair/Date

Requested by

[Signature] 03/20/07
Division or Unit Chair/Date

[Signature] 12/28/06
Chief Academic Officer/Date

Recommended by

Al Soper 27 Nov 06
Curriculum Chair/Date

Malcolm 2/24/07
Chancellor/Date

Revised Feb 2005/AC

Leg. 5/16

MAUI COMMUNITY COLLEGE

COURSE OUTLINE

1. COURSE TITLE: Math 140
Trigonometry and Analytic Geometry

NUMBER OF CREDITS: Three (3)

ABBREVIATED COURSE TITLE: Trig & Analytic Geom

DATE OF OUTLINE: November 2006

2. COURSE DESCRIPTIONS: Studies the trigonometric functions, their application, identities and equations, the conic sections, and some topics of discrete algebra.

3. CONTACT HOURS PER WEEK: Lecture — Three (3)

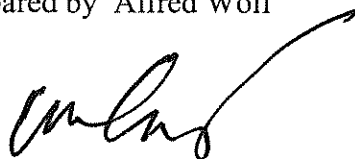
4. PREREQUISITES: MATH 135 with at least a C, or placement at MATH 140, and ENG 100 with at least a C or concurrent enrollment in ENG 100, or consent.

COREQUISITES: N/A

RECOMMENDED PREPARATION: Recommended: at least 11th grade reading skills.

Prepared by Alfred Wolf

APPROVED BY



DATE



5. GENERAL COURSE OBJECTIVES:

- a. To expose students to the beauty, power, clarity and precision of formal systems, in this case the algebraic and analytic systems found in Trigonometry and Analytic Geometry while exposing students to some interesting and exciting ideas in mathematics.
- b. To expose students to the concept of proof as a chain of inferences, and to have them practice this skill in the development and proofs of trigonometric identities.
- c. To have students apply formal rules or algorithms, in this course the rules and algorithms of trig functions and algebraic solution of equations.
- d. To have students use appropriate symbolic techniques in the context of problem solving and in the presentation and critical evaluation of evidence.
- e. To will observe and see the connection and transition between the general theoretical and its practical application.
- f. To acquire the use of numeric, graphical and algebraic techniques as mathematical tools for solving problems.
- c. To expose students to and have them acquire some knowledge of the methods and logic of mathematics so they may use it in solving problems.
- d. To acquire an understanding of functions, their graphs, special points, their descriptions.
- e. To use mathematical writing and symbols in solving problems.
- f. To use the calculator/computer as a tool of mathematics.
- g. To state and demonstration the interconnection between graphical, numerical and algebraic representation of information.

6. SPECIFIC COURSE COMPETENCIES:

Upon completion of this course, the student should be able to:

- a. Draw a complete and adequate picture of the relationship or function. Use algebraic, numerical, and graphical techniques to locate specific points or regions (Solve equations and inequalities). Describe the characteristics of the relation (domain, range, asymptotes, symmetries, extreme points) for a function given by a data set, graph, or equation.
- b. Do part a above focusing on the trigonometric functions and the conic sections.
- c. Find the inverse of a function and the composite of two functions. Specifically for the trig functions.
- d. Use the special trigonometric, algebraic properties and identities to rewrite expressions and solve equations.
- e. Use the law of sines and cosines to solve problems that directly relate to real world application.
- f. Identify the conic sections, write their equations, draw their graphs and list their properties.
- g. Use the polar to rectangular connection to work with vectors, polar graphs, and complex numbers.

- h. Write several mathematical papers that clearly and precisely show the sequence of steps in solving problem, and checking the results, and to argue persuasively through logical arguments and examples in discussing a mathematical situation.
- i. Apply trig functions or conic sections to model real world application.
- j. Construct the proofs for trig identities.
- k. Use the graphing calculator or computer software to draw graphs of equations and find specific points of the equation.

7.

8. RECOMMENDED COURSE CONTENT:

Week 1:	Introduction to the course and a background check to assess readiness for the course. Introduction to the calculator and computer technologies used in the course. k
Weeks 2-6:	Develop the definitions of the trig functions in general terms and their associated properties of domain, range, asymptotes, symmetries, extreme points. Applications of the trig functions to solving right triangles. TEST 1 a, b, c, h, k
Weeks 7- 11:	Exploration of the trig identities. Solutions to trig equations. Inverses and composites of functions and applications using law of sines and cosines. TEST 2 d, e, h, i, j, k,
Weeks 12-15:	Exploration conic sections — their definitions properties, graphs and algebraic forms. Extension of the trig forms into polar coordinates, vectors, and complex numbers. Topics in discrete math TEST 3 a, b, d, f, g, h, I, k

9. RECOMMENDED COURSE REQUIREMENTS:

Specific course requirements are at the discretion of the instructor at the time the course is being offered. Suggested requirements might include, but are not limited to:

- Written or oral examinations
- In-class exercises
- Homework assignments
- Quizzes
- Projects or research (written reports and/or oral class presentations)

10. TEXT AND MATERIALS:

An appropriate text(s) and materials will be chosen at the time the course is to be offered from those currently available in the field. Examples include:

Texts:

Demana, Franklin etc., Precalculus Functions and Graphs, Addison Wesley Longman Inc., New York

Software: DERIVE

Calculator: TI 83 or equivalent graphing calculator.

Materials:

Text(s) may be supplemented with:

Accompanying Practice Set if available

Articles and/or handouts prepared by the instructor

Other:

Appropriate films, videos or internet sites

Television programs

Guest Speakers

Other instructional aids

11. EVALUATION AND GRADING:

Examinations (written and/or oral)	40-80%
In-class exercises	0-30%
Homework	0-30%
Practice set	20-40%
Quizzes	0-30%
Projects/research	0-40%
Bonus projects and work	0-8%

12. METHODS OF INSTRUCTION:

Instructional methods vary considerable with instructors and specific instructional methods will be at the discretion of the instructor teaching the course. Suggested techniques might include, but are not limited to:

- Lecture, problem solving, and class exercises or readings
- Class discussions or guest lectures
- Audio, visual or presentations involving the internet
- Student class presentations
- Group or individual projects
- Other contemporary learning techniques (e.g., Service Learning, Co-op, School-to-Work, self-paced, etc.)

Assessment of Intended Student Learning Outcomes Standards – CCOWIQs with Ratings for MATH 140

Key:

3 = Major Emphasis: The student is actively involved (uses, reinforces, applies, and evaluated) in the student learning outcomes. The learner outcome is the focus of the class.

2 = Moderate Emphasis: The student uses, reinforces, applies and is evaluated by this learner outcome, but it is not the focus of the class

1 = Minor Emphasis: The student is provided an opportunity to use, reinforce, and apply this learner outcome, but does not get evaluated on this learner outcome

0 = No Emphasis: The student does not address this learner outcome

Standard 1: Written Communication	MATH 140
Write effectively to convey ideas that meet the needs of specific audiences and purposes.	
1.1 Use writing to discover and articulate ideas	0
1.2 Identify and analyze the audience and purpose for any intended communication	0
1.3 Choose language, style and organization appropriate to particular purposes and audiences	0
1.4 Gather information and document sources appropriately	1
1.5 Express a main idea as a thesis, hypothesis, and other appropriate content	0
1.6 Develop a main idea clearly and concisely with appropriate content	1
1.7 Demonstrate mastery of the conventions of writing, including grammar, spelling, and mechanics	0
1.8 Demonstrate proficiency in revision and editing	0
1.9 Develop a personal voice in written communication	0
Standard 2: Quantitative Reasoning	
Synthesize and articulate information using appropriate mathematical methods to solve problems and logically address real-life situations.	
2.1 Apply numeric, graphic and symbolic skills and other forms of quantitative reasoning, accurately and appropriately	3
2.2 Demonstrate mastery of mathematical concepts, skills, and applications, using technology when appropriate	3
2.3 Communicate clearly and concisely the methods and results of quantitative problem solving	3
2.4 Formulate and test hypotheses using numerical experimentation	3
2.5 Define quantitative issues and problems, gather relevant information, analyze that information, and present results	3
2.6 Assess the validity of statistical conclusions	1
Standard 3: Information Retrieval and Technology (Information Literacy)	
Access, evaluate, and utilize information effectively, ethically and responsibly.	
3.1 Use print and electronic information technology ethically and responsibly	
3.2 Demonstrate knowledge of basic vocabulary, concepts, and operations of information technology and retrieval	1
3.3 Recognize, identify, and define an information need	1
3.4 Access and retrieve information through print and electronic media, evaluating the accuracy and authenticity of that information	2
3.5 Create, manage, organize, and communicate information through electronic media	2
3.6 Recognize changing technologies and make informed choices about their appropriateness and use.	2
Standard 4: Oral Communication	
Practice ethical and responsible oral communications appropriate to a variety of audiences and purposes.	
4.1 Identify and analyze the audience and purpose of any intended communication.	0
4.0 Gather, evaluate, select, and organize information for the communication.	0
4.3 Use language, techniques, and strategies appropriate to the audience and occasion.	0
4.4 Speak clearly and confidently, using the voice, volume, tone, and articulation appropriate to the audience & occasion	0
4.5 Summarize, analyze, and evaluate oral communications and ask coherent questions as needed.	0
4.6 Use competent oral expression to initiate and sustain discussion.	0
Standard 5: Critical Thinking	
Apply critical reasoning skills to effectively address the challenges and solve problems.	
5.1 Identify and state problems, issues, arguments, and questions contained in a body of information.	2
5.0 Identify and analyze assumptions and underlying points of view relating to an issue or problem.	1
5.3 Formulate research questions that require descriptive and explanatory analyses.	1
5.4 Recognize and understand multiple modes of inquiry, including investigative methods based on observation and analysis.	1
5.5 Evaluate a problem, distinguishing between relevant and irrelevant facts, opinions, assumptions, issues, values, and biases through the use of appropriate evidence.	1
5.6 Apply problem-solving techniques and skills, including the rules of logic and logical sequence.	3
5.7 Synthesize information from various sources, drawing appropriate conclusions.	2
5.8 Communicate clearly and concisely the methods and results of logical reasoning.	2
5.9 Reflect upon and evaluate their thought processes, value system, and world views in comparison to those of others.	1