<table>
<thead>
<tr>
<th>Type of Action (circle appropriate)</th>
<th>C. Modification</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Addition</td>
<td>1. In credits</td>
</tr>
<tr>
<td>B. Deletion</td>
<td>2. In title</td>
</tr>
<tr>
<td>1. Regular</td>
<td>3. In number or alpha</td>
</tr>
<tr>
<td>2. Experimental</td>
<td>4. In prerequisites</td>
</tr>
<tr>
<td>3. Other (specify)</td>
<td>5. Other (specify)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>New Alpha, Number and Title</th>
<th>New Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
<td>n/a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Old Alpha, Number and Title</th>
<th>Old Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 140 PreCalculus: Trigonometry &amp; Analytic Geometry</td>
<td>n/a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prerequisites or Recommended Preparation</th>
<th>8. Student Contact Hours per Week</th>
<th>9. Proposed Date of First Offering</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 135 or equivalent, satisfactory math placement score, or consent of instructor</td>
<td>4 Lecture 0 Lab Other (specify)</td>
<td>n/a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>This Course IS (required) (elective) FOR THE AA Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>This Course (increases) (decreases) (makes no change) in the number of credits required FOR THE PROGRAM</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Similar Courses Offered Elsewhere</th>
</tr>
</thead>
<tbody>
<tr>
<td>UHM</td>
</tr>
<tr>
<td>Math 140, Trigonometry &amp; Analytic Geometry</td>
</tr>
<tr>
<td>Kauai CC</td>
</tr>
<tr>
<td>Math 125, PreCalculus: Trigonometry &amp; Analytic Geometry</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>This Course Is (Already Articulated) (appropriate for articulation) (Not appropriate for articulation)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Should have been articulated but course proposal was lost providing details of existing or desired articulation (Date, college(s), purposes, etc.):</td>
</tr>
<tr>
<td>UHM - College of Arts &amp; Sciences-core requirements (quantitative &amp; logical reasoning requirement).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reason for Initiating, Modifying or Deleting Course or Other Pertinent Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Math 130 was listed as a prerequisite. However, Math 130 will no longer be offered beginning Fall '87. Math 135 will replace Math 130 and hence should be the proper course listed as a prerequisite for Math 140 beginning Fall '87.</td>
</tr>
</tbody>
</table>

Requested by: Math/Science  
Department/Division:  
Chairperson:  
Date: 3/2/87

Approved by:  
Curriculum Committee  
Date: 3/19/87

Other required campus signature:  
Dean of Instruction  
Date: 4/6/87

WCC 4/85
### UNIVERSITY OF HAWAII COMMUNITY COLLEGES

**PROPOSAL TO INITIATE, MODIFY OR DELETE A COURSE**

**PROPOSED/ADOPTED**

(July 26, 1979)

---

**Remark by Provost:**

- For some unknown reason, the course proposal for Math 140 was lost when first processed in 1978.
- Here, the course was not properly added to the master course list. Moreover, the course has not been articulated with UH-Manoa College of Arts and Sciences.

---

**Institution:**

- Hiroshi - 
  Here is the Math 140 course proposal copy that I had. I'm sorry it is scratched up but I thought I had to submit a new proposal for articulation. Please advise.

  Jean O.

---

**PROPOSAL FOR MODIFICATION OR DELETION:**

- Regular
- Experimental
- Other —

---

**DELIVERY:**

<table>
<thead>
<tr>
<th>Alpha, Number A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Math 140, Pre-Cal</td>
</tr>
</tbody>
</table>

---

**DESCRIPTION:**

Study of the elementary functions and their inverses; vector sections; vector functions and their inverses.

---

**REQUISITES OR RECOMMENDATIONS OF STUDENT CONTACT HOURS PER WEEK**

<table>
<thead>
<tr>
<th>4 Lecture</th>
<th>0 Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other (specify)</td>
<td></td>
</tr>
</tbody>
</table>

**COURSE IS (REQUIRED) (ELECTIVE) FOR THE**

Liberal Arts PROGRAM

---

**COURSE (INCREASES) (DECREASES) (MAKES NO CHANGE) IN THE NUMBER OF CREDITS REQUIRED FOR THE PROGRAM:**

---

**SIMILAR COURSES OFFERED ELSEWHERE**

- **College(s):**
  - Waiau Community College
  - University of Hawaii, Manoa

- **Alpha, Number, Title:**
  - Math 125, Pre-Calculus: Trigonometry and Analytic Geometry
  - Math 140, Trigonometry and Analytic Geometry

---

**WIDE DETAILS OF EXISTING OR DESIRED ARTICULATION** (Date, college(s), purposes, major or major, etc.): Desired Articulation: Date: Fall 1982

- **Purposes:**
  - To facilitate student transfer from WCC to University of Hawaii at Manoa,
  - To curtail the time period for students to acquire the necessary pre-calculus skills from possibly three semesters (Math 120, 122, 126) to two semesters (Math 120, 140).

---

**REASON FOR INITIATING, MODIFYING OR DELETING COURSE OR PERTINENT COMMENT:**

The primary reasons for the proposal are to expedite student completion of the pre-calculus sequence, and to facilitate student transfer from WCC to UH. Furthermore, the mathematics faculty will evaluate this course to determine whether it is appropriate to UH, since it is uncertain whether one pre-calculus course (Math 140) will satisfactorily provide what two courses (Math 122, 126) have done.

---

**REQUESTED BY:**

Mathematics/Science

Department/Division: Curriculum Committee

Chairperson: Date:

---

**PROVED BY**

Curriculum Committee

Date:

(Other required campus signature)

Date:

Dean of Instruction

Date:

---

**CREDITS**

- (specify)

---

**CREDITS**

- (specify)

---

**IONS AND SPECIFIC COURSES**

- Liberal Arts

---

**LIBERAL ARTS PROGRAM**

---

**STUDY OF THE ELEMENTARY FUNCTIONS AND THEIR INVERSES; VECTOR SECTIONS; VECTOR FUNCTIONS AND THEIR INVERSES.**
LEVELS OF REVIEW OF COURSE PROPOSALS AT WCC

1. Subject Area (one or more instructors in the area)
   
   October 30, 1981
   October 30, 1981
   Nov. 2, 1981
   
   signatures
   
   2. Division
   
   date

   department chairperson

   3. Administrative Confirmation of System Requirements
   
   signature
   
   date

   4. Curriculum Committee First Review
   
   Disapproved __________
   
   Reason:

   Further Information Required __________
   
   Please provide the following:

   Approved for review by other divisions __________

   Curriculum Committee Chairperson
   
   date
   (target date: )

   5. Curriculum Committee Second Review
   
   Approved __________

   Disapproved __________
   
   Reason:

   Curriculum Committee Chairperson
   
   date
WCC CURRICULUM REVIEW FORM I

FORM FOR COURSE PROPOSALS

A. Information Needed for Processing ALL Course Proposals

Course Title: Math 140, Pre-Calculus: Trigonometry and Analytic Geometry

Transfer

Yes, to UHM and most baccalaureate institutions

Non-transfer

Submitted

Sione Uluave, Jean Yoshida and

Date

October 27, 1981

David Furuta

1. Course Objectives:
   The objectives of this course are:
   (1) To provide a functional approach to trigonometry;
   (2) To illustrate the trigonometric functions, relations, graphs, and applications;
   (3) To present the conic sections and their uses;
   (4) To demonstrate vector operations and vector applications in the mathematical science;
   (5) To describe the major coordinate systems, such as the cartesian and polar systems.
   Refer to the course outline

2. Provide details of additional staff, equipment facilities, library/media material and equipment; other financial support that would be required to implement the new course or the course modification.

   Has this additional cost been included in the budget for the proposed date of offering? Include in estimate of actual cost of supplies and equipment in addition to cost already budgeted by the discipline.

Since the proposed course, Math 140, shall be the synthesis of two existing courses, Math 123- Pre-calculus: Trigonometry and Math 126- Pre-calculus: Analytic Geometry, then the financial support and costs would not be more than what would be normally required for the two existing courses. Further, the staff and facilities requirements will be less than what would be normally needed for the two existing pre-calculus courses.
Information Needed to Process New Course Proposals

1. Course relation to EDP of the College:

One of the primary objectives of the Liberal Arts Program is to seek to meet baccalaureate program requirements for four-year colleges in Hawaii and in other locales. The proposed course would facilitate student transfer from Windward Community College to a four-year college by curtailing the time period for students to acquire pre-calculus skills.

2. Program course in (Please give some information concerning the status of the program and the relation of the course to the program):

At WCC:
Liberal Arts: The proposed course could be used to fulfill the quantitative and logical reasoning requirement for the A.A. degree.
At UH Manoa, this course could be used to fulfill the quantitative and logical reasoning requirement for the Bachelor of Arts degree.

3. Independent work by students:

Reading textbook and any other assigned materials; studying lecture notes, discussion-related problems, and doing homework problems
(participating in optional learning activities and doing homework problems
assigned or recommended). Use college or colIected students in their learning.

4. Rationale for articulation with UHM General Education Core—attach Windward Community College Form 3 for transfer course criteria, if appropriate:

UHM presently has a course: Math 140, Trigonometry and Analytic Geometry. Refer to Windward Community College Form 3.

5. If similar to an upper division course, explain community college application:

Not similar to an upper division course.

6. If course is experimental and unique to Windward Community College, indicate additional rationale and impact on college curriculum, if appropriate:

N/A

D. Attach Course Outline for New Course Proposals or for Course Modifications that involve changes in content, syllabus, or time schedule. Use the Windward Community College FORM 2: General Course Outline for Proposed Course. A student course outline may be submitted, if it indicates the syllabus, content, and time schedule of the proposed course.
WCC CURR. FORM 2

GENERAL OUTLINE FOR PROPOSED COURSE

Course Math 140 PRE-CALCULUS: Trigonometry and Analytic Geometry
Transfer xxx Nontransfer New xxx Modified

1. COURSE DESCRIPTION:
Study of the elements of trigonometry and analytic geometry including topics such as functions and their inverses; trigonometric function, relations, graphs, and applications; conic sections; vector applications; and cartesian and polar coordinate systems.

2. HOURS PER WEEK: LEC 4 LAB OTHER TOTAL 4

3. PREREQUISITES: Math 120 or equivalent, satisfactory math diagnostic/placement score, or consent of instructor.

4. SPECIFIC COURSE OBJECTIVES: Upon completion of the course, the student will be able to...
   (1) Demonstrate competency in utilizing the trigonometric functions.
   (2) Apply the axioms of the real numbers and its properties to the understanding of the trigonometric relations and of the concepts of analytic geometry.
   (3) Apply algebraic techniques and theorems in the analysis of trigonometric identities, functions, graphs and applications.
   (4) Utilize algebraic processes in the study of coordinate systems.
   (5) Recognize standard equation forms and their graphs, and solve problems relating to these relations.
   (6) Perform transformations on functions and relations.

5. TEXTBOOK AND MATERIALS: Pre-Calculus Mathematics by Flanders/Price; 2nd Edition

6. REFERENCE MATERIAL SAMPLES:
   Trigonometry: A Functions Approach by Keedy and Bittinger
   Analytic Geometry by Riddle
   Essentials of Precalculus Mathematics by Dennis Christy
   Analytic Geometry by Spieghart
   Precalculus Algebra, Trigonometry and Geometry by McLeod/Stolze
   Pre-Calculus by Salas

7. AUXILIARY MATERIALS:
   Note: WECO Electronic Study Guide for Trigonometry
   Software
   Package 1: Getting Ready for Trigonometry
   Package 2: Trigonometric Functions
GENERAL OUTLINE FOR PROPOSED COURSE

Course: Math 140 PRE-CALCULUS: Trigonometry and Analytic Geometry

7. AUXILIARY MATERIALS:
Audio and visual cassettes and filmstrips are available for purchase that will cover the objectives and content of this course.

Trigonometry: Cassette/Filmstrips

Computron Software: WERCO - Trigonometry Electronic Blackboard

8. METHODS OF INSTRUCTION:
The mode of instruction will be primarily lecture-discussion where the initial portion of each class period is utilized to discuss and clarify any questions from the preceding class meeting, and the remaining portion is employed to present and discuss additional unit objectives. After the completion of each unit of instruction, a review period and an examination period will be conducted. An optional or alternate method of instruction will be independent study. This mode will encompass independent study of the course objectives by the student under direct supervision of the instructor and a time schedule established to assure the completion of the course objectives, assignments and examinations.

9. EVALUATION:
Evaluation will be determined by the successful completion of all assignments and tests on the unit objectives. All tests will be taken without any reference materials. Questions selected for the examinations will be very similar to the "blueprint" unit review test given prior to the in-class examination. Letter grades given on each examination will follow the approved college grading scheme.

10. OTHER
Other information such as office hours and lab (tutoring services) available will be discussed at the initial class meeting.

11. SYLLABUS: CONTENT AND TIME SCHEDULE:
A course outline and time schedule will be given to the student at the initial class period. These will depict all the specified topics and content to be covered and the appropriate times that they will be covered and discussed in class.
WCC CURR. FORM 3
TRANSFER COURSE CRITERIA

Course: Math 140 PRE-CALCULUS: Trigonometry and Analytic Geometry

Submitted by Sione Uluave, Jean Yoshida and David Furuto Date October 27, 1981

1. RATE OF STUDENT PROGRESS:
This will be primarily determined by the successful completion of each consecutive course objective by the student within the time frame provided by the course time schedule and the amount of time given by the student to study and complete assignments outside of class.

2. BASIC SKILLS NEEDED: Reading and comprehension at college level. Reading level of the text: 13- (approximately) 13th grade. College algebra skills and the ability to work with basic geometric concepts are needed.

3. AMOUNT OF SKILLS AND INDEPENDENT WORK REQUIRED:
Significant familiarity with algebraic and geometric operations is needed. A substantial amount of time to complete assignments at home and to do independent reading will be required of the student.

4. REASONING REQUIRED:
Competence in deductive and inductive reasoning is required. Understanding of the construction of theorems and the derivations of their proofs is essential and desirable.

5. CONCEPTUAL COURSE LEVEL:
College transfer pre-calculus course in trigonometry and analytic geometry that requires a synthesis of algebra concepts with trigonometric and analytic geometry concepts.

6. BACKGROUND KNOWLEDGE PREREQUISITE:
Math 120, Pre-Calculus: College Algebra at Windward Community College or equivalent.

7. MASTERY LEVEL EXPECTED:
The elements of this course will prepare students to meet the pre-requisite for Math 205: Calculus I with the condition that the student passes the course with a letter grade of C or better.

8. COUNTERPART IN 4 YEAR CAMPUS: UHM Math 140: Trigonometry and Analytic Geometry. However, WCC's Math 140 would be assigned 4 credits compared to UHM's 3 credits. This difference is due to (1) one additional topic - translation and rotation of axes and (2) the substantial amount of homework that will be required of students.

COURSE USE IN MAINLAND ACCREDITED SYSTEMS:
Upon checking mainland-accredited universities, their catalog shows that most pre-calculus courses of this level are very similar or in many cases identical to our proposed course. A correlated uniformity can be established. This is a standard pre-calculus course in trigonometry and analytic geometry and should be acceptable to mainland accredited universities.