COLLEGE OF THE MARSHALL ISLANDS

COURSE OUTLINE

CIP No. 27.0102
MATH 140
Alpha Number
Pre-Calculus
Course Title

Course Description
Designed to prepare students for success in calculus by enabling students to develop a thorough understanding of relations and functions (algebraic, polynomial, rational, trigonometric, exponential, and logarithmic), matrices, sequences and series, trigonometry, and analytic geometry.

Course prepared by: Liberal Arts Department Feb 2000

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<th>Hours per Week</th>
<th>Number of Weeks</th>
<th>Total Hours</th>
<th>Credits</th>
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<td>Lecture</td>
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Purpose of Course: Degree Requirement
Degree Elective X
Certification
Developmental
Other

Prerequisite(s) MATH 110

Signature, Curriculum & Assessment Committee Chairperson 1-4-2012

Signature, Dean of Academic Affairs 1-4-2012

Last Date reviewed or revised: April 2009
I. Course Title

Pre-Calculus

II. Course Objectives

A. General Outcomes

Students who complete this course will:
1. Produce and analyze functions both algebraically and graphically (LA 1, 3, 4)
2. Use matrices as a tool for problem solving (LA 3, 4)
3. Generate and apply sequences and series (LA 3, 4)
4. Understand the basics of analytic geometry (LA 1, 3, 4)
5. Utilize principles of trigonometry to solve practical problems (LA 1, 3, 4)

B. Student Learning Outcomes

Upon completion of this course, the student will be able to:
1. Manipulate linear, polynomial, rational, exponential, logarithmic, and trigonometric functions:
   a. Simplify and solve functions algebraically and graphically
   b. Find inverse functions algebraically and graphically
   c. Identify critical points of functions algebraically and graphically
   d. Model real-world problems using functions
2. Use matrix operations:
   a. Solve systems of linear equations with matrices
   b. Identify dependent and inconsistent systems of equations
3. Generate and apply sequences and series
   a. Represent series using summation (sigma) notation
   b. Derive the generating function of arithmetic and geometric sequences and series
   c. Find the sum of a series
   d. Apply sequences and series in mathematical induction and the binomial theorem
4. Sketch and analyze the properties of conic sections
   a. Sketch circles, parabolas, ellipses, hyperbolas in rectangular coordinates
   b. Express the equation of conic sections using standard equations and parametric equations.
5. Use principles of trigonometry
   a. Measure angles, arcs, and solve right triangles
   b. Derive, prove and use trigonometry identities to solve equations
   c. Apply the law of cosines, law of sines, and vectors (in rectangular and polar coordinates) to solve problems

III. Course Content

This course prepares students for success in calculus.

1. Relations and functions
2. Matrices
3. Sequences and series
4. Analytic geometry
5. Trigonometry

IV. Methods of Instruction

1. Lecture
2. Cooperative group activities
3. Whole-class activities
4. Computer software programs
5. Projects
V. Equipment and Materials

1. Rulers
2. Geometric tools
3. Scientific and graphing calculators
4. Math videos
5. TV and VCR
6. Computer lab

VI. Suggested Methods of Evaluation

1. Participation
2. Direct Observation
3. Homework
4. Class work
5. Group Work
6. Quizzes
7. Exams
8. Projects

Letter grades will be assigned per CMI Grading System.
Course History Summary

Course Number: MATH 140  Pre-Calculus (5cr)

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