NC 225B: PRE-CALCULUS B

Citrus College Course Outline of Record

Heading	Value
Effective Term:	Summer 2022
Credits:	0
Total Contact Hours:	60
Lecture Hours :	60
Lab Hours:	0
Hours Arranged:	0
Outside of Class Hours:	120
Prerequisite:	Placement by a high school counselor.
Transferable to CSU:	No
Transferable to UC:	No
Grading Method:	Non-Credit Course

Catalog Course Description

This course will cover an in-depth instruction on the topics of statistics and probability. Students will need to identify mean, median, and mode from data represented in a variety of ways. In addition, standard deviation and normal curves will be calculated from sample data. Probability will cover experimental and theoretical, as well as compound and conditional probability. In addition, this course will cover two and three dimensional vectors and their interactions as applicable with limited knowledge of calculus. 60 lecture hours.

Course Objectives

- Identify, describe, compare and analyze linear, quadratic, exponential, logarithmic, and trigonometric functions.
- Apply concepts with vectors in 2 and 3 dimensions.
- Demonstrate manipulated trigonometric identities.
- Create and analyze mathematical models.
- Apply the rules of probability to a variety of situations.
- Apply definitions, properties, and theorems to trigonometric problem solving.
- Expand trigonometric problem solving to problems involving physical applications of trigonometry.
- Understand and apply knowledge of algebraic strategies used with trigonometry.
- Demonstrate ability to solve problems using a graphing calculator.
- Solve systems of equations.
- Apply operations with matrices.
- Identify and apply concepts of arithmetic and geometric sequences.
- Identify and manipulate conics.

Major Course Content

1. Polar coordinates and vectors in the plane
   a. Translate between polar and rectangular coordinates
   b. Interpret polar coordinates and vectors graphically
2. Complex numbers
   a. Trigonometric form of complex numbers
   b. Function of a complex variable as a function of two real variables
   c. Proof of DeMoivre's theorem
3. Proofs of formulas using the technique of mathematical induction
4. Fundamental theorem of algebra
5. Conic sections
   a. Analytical
   b. Geometrical
6. Quadratic equation in two variables
   a. Standard form - complete the square and use rotations and translations
   b. Determine what type of conic section the equation represents
   c. Determine geometric components (foci, asymptotes, etc.)
7. Geometric description of a conic section - e.g., the locus of points whose sum of its distances from (1, 0) and (-1, 0) is 6 - and derive a quadratic equation representing it
8. Roots and poles of a rational function
   a. Graph functions
   b. Locate asymptotes
9. Parametric functions and equations
   a. Graphs
10. Limit of a sequence and limit of a function as the independent variable approaches a number or infinity
    a. Convergent and divergent sequences

Suggested Reading Other Than Required Textbook

No other required reading

Examples of Required Writing Assignments

No other required writing assignments

Examples of Outside Assignments

Complete assigned problems from textbook.

Instruction Type(s)

Lecture, Online Education Lecture