

**Office:** FEM 1E

**Office HRS:** MTW 8:00-9:00, or by appt.

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**Math 4B - 55339:** Precalculus

**Class meets:** M-Th 11:00-12:50, CCI 201

**Text:** Precalculus with MyLab 5/e, Lial

**Prerequisite:** Math 4A.

**Basic Skills Advisories:** Eligibility for English 126.

### Description

The course is an analytic and comprehensive study of algebra, geometry and trigonometry designed to prepare students for calculus. Topics include conic sections, inequalities, systems of equations, polynomial, trigonometric, rational, exponential and logarithmic functions and their graphs.

### Expectations / Responsibilities

#### Instructor

- Motivate and inspire student success.
- Provide a classroom climate in which the student takes responsibility for learning.
- Provide the necessary instruction and model the quality of work to be successful in Math 4A.
- Clearly communicate progress being made in a timely fashion.

#### Student

- Follow the class rule – **Be Nice**.
- Be in each class on time with *full participation* from *start to finish*.
- Stay off of your phone while in class.
- Complete assignments by the due date.
- Study Trigonometry daily.
- Learn the material that is taught and *seek additional assistance* when necessary.
- All written work must be neat, complete, concise and accurate to receive full credit.
- Promptly communicate any class related issues.
- If you miss a class in the first 3 weeks you may be dropped.
- If you miss any class time it may be counted as an absence.
- If you have more than 3 absences, you may be dropped.
- If your Homework average is below 90% on 3/25, you may be dropped.
- If your Test average is below 60% on 3/25, you may be dropped.

### Grading

**Scale**    **A** 90-100%      **B** 80-89%      **C** 70-79%      **D** 60-69%

**Tests 80%** There will be 2 tests and a final. There are **no make-up tests**. A test may be taken early with prior approval.

**Homework** Homework may consist of written assignments and assignments on **20%** MyLab. **No late homework is accepted.**

\*Test Dates are subject to change.

**Testing Procedure**

Tests are to be completed in pencil. There are **no make-up tests**. You may use a scientific calculator. No graphing calculator. **NO PHONE**.

If you are more than 10 minutes late for your arranged test, then the test will be a **ZERO**. The end time for the test is the end time for the class.

Once you have started the test, you must complete the test and turn it in before leaving the room.

You will be informed if notes, charts, and scantrons may be used for specific tests.

**Academic Dishonesty**

**Cheating** is the act or attempted act of taking an examination or performing an assigned, evaluated task in a fraudulent or deceptive manner, such as having improper access to answers, in an attempt to gain an unearned academic advantage. Cheating may include, but is not limited to, copying from another's work, supplying one's work to another, giving or receiving copies of examinations without an instructor's permission, using or displaying notes or devices inappropriate to the conditions of the examination, allowing someone other than the officially enrolled student to represent the student, or failing to disclose research results completely.

**Plagiarism** is a specific form of cheating: the use of another's words or ideas without identifying them as such or giving credit to the source. Plagiarism may include, but is not limited to, failing to provide complete citations and references for all work that draws on the ideas, words, or work of others, failing to identify the contributors to work done in collaboration, submitting duplicate work to be evaluated in different courses without the knowledge and consent of the instructors involved, or failing to observe computer security systems and software copyrights. Incidents of cheating and plagiarism may result in any of a variety of sanctions and penalties, which may range from a failing grade on the particular examination, paper, project, or assignment in question to a failing grade in the course, at the discretion of the instructor and depending on the severity and frequency of the incidents.

***NOTE:** If you have a verified need for an academic accommodation or materials in alternate media (i.e., Braille, large print, electronic text, etc.) per the Americans with Disabilities Act or section 504 of the Rehabilitation act please contact me as soon as possible.*

*Please refer to SCCCD policies for guidance on all matters relating to this course.*

**Objectives**

- A. graph and identify the domain and range of conic sections and the following types of functions and their transformations; polynomials, absolute value, rational, exponential, logarithmic and trigonometric.
- B. solve the following types of equations; polynomial, rational, absolute value, trigonometric, logarithmic and exponential.
- C. identify the solution set for inequalities with absolute value, polynomials and rational expressions.
- D. set-up and solve mathematical modeling problems including; interest problems, exponential growth and decay, projectile and motion problems.
- E. learn the analytic aspects of trigonometric functions of right, acute and related angles.
- F. derive basic trigonometric identities and use them to simplify trigonometric expressions and solve trigonometric equations.
- G. apply the unit circle to trigonometry and perform angle conversions using radian and degree measure.
- H. memorize the trigonometric values of the fundamental angles and how to analyze inverse trigonometric functions.
- I. apply the analytic aspects of inverse trigonometric functions and trigonometric formulas to simplify and solve trigonometric problems.
- J. use partial fraction decomposition to prepare an expression for integration.
- K. find the inverse of one-to-one functions, and graph the function and its inverse.
- L. solve systems of equations.

**Course Outline**

- A. Polynomials
  - a. Solve equations algebraically (including Rational Roots Theorem and other techniques)
  - b. Graphs of polynomials and their transforms, including linear, quadratic, quadratic forms, cubic, and power functions (range & domain, even & odd functions).
  - c. One-to-one functions and their inverse
  - d. Quadratic Formula
  - e. Application problems (such as projectile motion, maximizing profit and minimizing volume)
- B. Exponential & Logarithmic Functions
  - a. Graphing and functions and transformations of graphs (range & domain)
  - b. Applications including but not limited to, interest, population growth, exponential growth and decay
  - c. Solve equations
  - d. One-to-one functions and their inverses
- C. Trigonometric Functions
  - a. Graph including transformations of graphs (range & domain, period, amplitude)
  - b. Pythagorean and reciprocal identities
  - c. Unit circle and right triangles
  - d. Various formulas including but not limited to, sum & difference formulas
  - e. Solve equations and applied problems
  - f. Laws of Sines and Cosines
- D. Circles
  - a. Equation manipulation into standard form
  - b. Graph
- E. Rational Functions
  - a. Graph including, vertical, horizontal and oblique asymptotes and points of discontinuity
  - b. Identify the range & domain
  - c. polynomial long or synthetic division for oblique asymptote identification
  - d. Partial fraction decomposition
  - e. Solve equations
  - f. Remainder Theorem
- F. Inequalities
  - a. Graphic and algebraic solutions of inequalities with rational expressions, polynomials, absolute value, and conic sections
- G. Systems of equations
  - a. Solve systems
  - b. Decompose a rational function for integration