

**MATH 244-01**  
**PRECALCULUS WITH TRIGONOMETRY**

**Meets: Monday-Friday Time: 7:45-8:50 Room: 342**

**INSTRUCTOR CONTACT INFORMATION AND OFFICE HOURS**

**Instructor:** Shannon Gracey **Phone:** 619-421-6700 ext. 5517

**e-mail:** [sgracey@swccd.edu](mailto:sgracey@swccd.edu) **website:** [www.swccd.edu/~sgracey](http://www.swccd.edu/~sgracey)

**Office:** Room 320E, M/W 10:15-11:45, T/TH 10:15-10:50, or you may make an appointment by calling or e-mailing me, using the contact info written above.

**COURSE MATERIALS**

**Text:** *College Algebra and Trigonometry, 5<sup>th</sup> ed.*, Aufmann, Barker, and Nation

**Calculator:** A graphing calculator is REQUIRED. TI 84 is recommended.

**PREREQUISITES AND RECOMMENDED PREPARATION**

**Prerequisite:** MATH 65 or the equivalent skill level as determined by the Southwestern College Mathematics Assessment or equivalent

**Recommended Preparation:** RDG 56 or the equivalent skill level as determined by the Southwestern College Reading Assessment or equivalent

**POWER STUDY SESSION (SUPPLEMENTAL INSTRUCTION)**

The Power Study Program is a pilot program offered by the Academic Success Center (ASC). Power Study Sessions are group study sessions directed by a student facilitator that integrate how to learn with what to learn. A Power Study leader will conduct a study session twice a week (schedule TBA). This session will provide an opportunity to review further example problems, work in groups to tackle problems similar to those assigned, and to address study skills and techniques particularly suited to the learning goals of a challenging college class.

**QUESTIONS**

Questions are an important part of the learning process. If you have a question, please feel free to ask me at any time! If you have a question, there are probably at least 5 other students with the same question. If I cannot answer your question immediately, I will come back to it ASAP.

**HOMEWORK**

Homework will be collected on exam and quiz days at the beginning of the class.

Homework is graded on completeness. Each new assignment must be started on a new paper, be clearly labeled with the chapter, section, and assignment, and stapled. In order to be successful in this course, **YOU MUST PRACTICE MATH PROBLEMS!!! No late homework will be accepted.**

## **QUIZZES & EXAMS**

Quizzes will typically be given at the end of each odd chapter. There will be at least 5 quizzes. No quizzes will be dropped, however your lowest quiz score may be replaced by your attendance percentage. Exams will typically be given at the end of each even chapter and will also cover the previous odd chapter. No exams are dropped, however your lowest exam score may be replaced by your earned homework percentage.

## **ATTENDANCE & TARDIES**

Each student is responsible for his/her registration in classes. Each student must attend the first class meeting or make arrangements with the instructor if he/she is going to be absent. Failure to attend the first class meeting or excessive unexcused absences, that is, more than 10 hours of missed class time, may result in a student being dropped from this class. Each class you will be given 2 points if you arrive on time and stay for the entire class, 1 point if you arrive late or leave early, and 0 points if you are absent. At the end of the semester this percentage  $\{(earned\ points)/(points\ possible)\} \times 100$  will replace your lowest quiz score.

## **TUTORING AND ACADEMIC SUCCESS CENTER REFERRAL**

To further your success, reinforce concepts, and achieve the stated learning objectives for this course, I refer you to Academic Success Center learning assistance services. You will be automatically enrolled in NC 3: Supervised Tutoring, a free noncredit course that does not appear on your transcripts. Services are located in the ASC (420), the Writing Center (420D), the Reading Center (420), Math Center (426), the Library/LRC Interdisciplinary Tutoring Lab, MESA (396), specialized on-campus School tutoring labs, the Higher Education Center, and the San Ysidro Education Center. Online learning materials and Online Writing Lab (OWL) are available at [www.swccd.edu/~asc](http://www.swccd.edu/~asc).

## **DISABILITY SUPPORT SERVICES (DSS)**

DSS provides programs and services for students with disabilities. Southwestern College recommends that students with disabilities discuss academic accommodations with their professors during the first two weeks of class. This syllabus and course handouts are available in alternate media upon request.

## **BEHAVIOR**

- **CHEATING ON ANY TEST OR QUIZ WILL EARN A GRADE OF F!!! PLAGIARISM (COPYING) OF OTHER PEOPLE'S WORK IS NOT ACCEPTABLE.** Any person caught doing this will get an F on the assignment or test in question and can also potentially be given a grade of F for the course and/or be referred to the college discipline process.
- You may not use your cell phone or PDA as a calculator on exams.
- During class your cell phone/pager should be off.
- If you know you need to leave class early, or if you arrive late, take a seat near the door.
- **RESPECT YOUR FELLOW STUDENTS AT ALL TIMES!!!**

## GRADING

Exams (6—MAKE-UPS ARE GRANTED ONLY IF I AM NOTIFIED <u>BEFORE THE EXAM</u> ) .....	55%
Quizzes (5—MAKE-UPS ARE GRANTED ONLY IF I AM NOTIFIED <u>BEFORE THE EXAM</u> )...	20%
HOMEWORK (NO LATE ASSIGNMENTS ACCEPTED).....	5%
Final (CUMULATIVE).....	20%

A: 90%—100% B: 80%— 89% C: 70%— 79% D: 60%— 69% F: 59% and below

*Final grades are left to the discretion of the instructor.*

## COURSE DESCRIPTION AND OBJECTIVES

1. Student will solve linear and absolute value equations and inequalities.
2. Student will find the domain, inverse (if it exists) and graph the following: polynomial, rational, exponential, and logarithmic functions.
3. Student will find the sum, difference, quotient, product of two functions and the resulting domain.
4. Student will find the composition of two functions and the resulting domain.
5. Student will solve polynomial, rational, exponential, and logarithmic equations and inequalities and apply these methods in solving word problems.
6. Student will solve systems of linear equations using the augmented matrix method.
7. Student will apply the binomial expansion theorem.
8. Student will recognize and find the sum of an infinite geometric series when the absolute value of the common ratio is less than one.
9. Student will recognize and graph conic sections.
10. Student will input data and use a graphing calculator to find the appropriate regression.
11. Student will define and apply the trigonometric functions with respect to general angles in terms of degrees and radians.
12. Student will evaluate the trigonometric functions of special angles (and their multiples) as well as the quadrantal angles.
13. Student will solve problems in the application of radian measure, i.e., arc length, area of a sector, linear and angular velocity.
14. Student will graph all trigonometric functions and the inverse functions for sine, cosine and tangent with respect to periodicity, translation, amplitude and phase shift.
15. Student will prove trigonometric identities using the basic fundamental identities.
16. Student will solve trigonometric and inverse trigonometric equations
17. Student will solve for unknown parts of the right and oblique triangles using the law of sines and law of cosines.
18. Student will set up and solve geometric and real-life problems with a calculator.
19. Student will represent a vector in algebraic form and perform simple operations with vectors.
20. Student will represent complex numbers in algebraic, geometric and polar form.

**\*As a final note: To be successful in this course, it is recommended that you spend 2 hours outside of class for every hour in class.**

## Chapter P: Preliminary Concepts

- P.1 The Real Number System
- P.2 Integer and Rational Number  
Exponents
- P.3 Polynomials
- P.4 Factoring
- P.5 Rational Expressions
- P.6 Complex Numbers

## Chapter 1: Equations and Inequalities

- 1.1 Linear and Absolute Value Equations
- 1.2 Formulas and Applications
- 1.3 Quadratic Equations
- 1.4 Other Types of Equations
- 1.5 Inequalities
- 1.6 Variation and Applications

## Chapter 2: Functions and Graphs

- 2.1 A Two-Dimensional Coordinate System and Graphs
- 2.2 Introduction to Functions
- 2.3 Linear Functions
- 2.4 Quadratic Functions
- 2.5 Properties of Graphs
- 2.6 The Algebra of Functions
- 2.7 Modeling Data Using Regression

## Chapter 3: Polynomial and Rational Functions

- 3.1 The Remainder Theorem and the Factor Theorem
- 3.2 Polynomial Functions of Higher Degree
- 3.3 Zeros of Polynomial Functions
- 3.4 The Fundamental Theorem of Algebra
- 3.5 Graphs of Rational Functions and Their Applications

## Chapter 4: Inverse Functions

- 4.1 Inverse Functions
- 4.2 Exponential Functions and Their Applications
- 4.3 Logarithmic Functions and Their Applications
- 4.4 Logarithms and Logarithmic Scales
- 4.5 Exponential and Logarithmic Equations
- 4.6 Exponential Growth and Decay
- 4.7 Modeling Data with Exponential and Logarithmic Functions

## Chapter 5: Trigonometric Functions

- 5.1 Angles and Arcs
- 5.2 Trigonometric Functions of Acute Angles
- 5.3 Trigonometric Functions of Any Angle
- 5.4 Trigonometric Functions of Real Numbers
- 5.5 Graphs of the Sine and Cosine Functions
- 5.6 Graphs of the Other Trigonometric Functions
- 5.7 Graphing Techniques

## Chapter 6: Trigonometric Identities and Equations

- 6.1 Verification of Trigonometric Identities
- 6.2 Sum, Difference, and Cofunction Identities
- 6.3 Double- and Half-Angle Identities
- 6.4 Identities Involving the Sum of Trigonometric Functions
- 6.5 Inverse Trigonometric Functions
- 6.6 Trigonometric Equations

## Chapter 7: Applications of Trigonometry

- 7.1 The Law of Sines
- 7.2 The Law of Cosines and Area
- 7.3 Vectors
- 7.4 Trigonometric Form of Complex Numbers
- 7.5 DeMoivre's Theorem

## Chapter 8: Topics in Analytic Geometry

- 8.1 Parabolas
- 8.2 Ellipses
- 8.3 Hyperbolas
- 8.4 Rotation of Axes (skip)
- 8.5 Introduction to Polar Coordinates
- 8.6 Polar Equations of the Conics
- 8.7 Parametric Equations

## Chapter 9: Systems of Equations

- 9.1 Systems of Linear Equations in Two Variables
- 9.2 Systems of Equations in More Than Two Variables
- 9.3 Nonlinear Systems of Equations
- 9.4 Partial Fractions
- 9.5 Inequalities in Two Variables and Systems of Inequalities
- 9.6 Linear Programming (skip)

## Chapter 10: Matrices

- 10.1 Gaussian Elimination Method
- 10.2 The Algebra of Matrices
- 10.3 The Inverse of a Matrix (skip)
- 10.4 Determinants
- 10.5 Cramer's Rule

## Chapter 11: Sequences, Series, and Probability

- 11.1 Infinite Sequences and Summation Notation
- 11.2 Arithmetic Sequences and Series
- 11.3 Geometric Sequences and Series
- 11.4 Mathematical Induction
- 11.5 The Binomial Theorem
- 11.6 Permutations and Combinations
- 11.7 Introduction to Probability