

MATH 2412.001 - PRECALCULUS

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Math & Engineering 120
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OFFICE HOURS: Monday/Wednesday: 9:45-11:00am and 1:30-2:30pm
Tuesday/Thursday: 9:45-11:00am
Friday: 9:00am – 12:00pm
OR BY APPOINTMENT

Credit: 4 **Lecture:** 3 **Lab:** 1

This course satisfies a core curriculum requirement: Yes – Mathematics

Textbook: *PreCalculus*, 1st Edition by Neal, Gustafson, and Hughes
(ISBN-13: 978-0-495-82662-0)
(ISBN-10: 0-495-82662-6)

Supplies (*computer access/software/art material/camera/instrument*): Calculator: TI-83 or TI-84, graph paper, and a ruler. TI-Inspire and TI-89 are not allowed.

Course Description (*from the catalog*): This course covers the study of algebraic, polynomial, rational, exponential, and logarithmic/trigonometric functions. Topics in analytic geometry are covered.

Course Purpose/Rationale/Goal – (*what some may call objectives*): The purpose/rationale/goal of this course is to acquaint the student with solutions to different mathematical problems. The course covers algebra, trigonometry, and analytic geometry.

Attendance Policy: Whenever absences become excessive and, in the instructor's opinion, minimum course objectives cannot be met due to absences, the student will be withdrawn from the course (5 or more absences).

Equal Opportunity: South Plains College strives to accommodate the individual needs of all students in order to enhance their opportunities for success in the context of a comprehensive community college setting. It is the policy of South Plains College to offer all educational and employment opportunities without regard to race, color, national origin, religion, gender, disability, or age.

Disability Statement: Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request accommodations in this class should notify the Special Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodations must provide acceptable documentation of his/her disability to the Special Services Coordinator. For more information, call or visit the Special Services Office in the Student Services Building, 894-9611 ext. 2529, 2530

Student Learning Outcomes/Competencies:

1. Upon successful completion of this course students will:
2. Demonstrate and apply knowledge of properties of functions. (1.2, 1.6, 1.7)
3. Recognize and apply algebraic and transcendental functions and solve related equations. (2.1–2.5, 3.6, 4.2, 4.3)
4. Apply graphing techniques to algebraic and transcendental functions. (2.1–2.5, 4.4, 4.5, 7.2)
5. Compute the values of trigonometric functions for key angles in all quadrants of the unit circle measured in both degrees and radians. (4.1, 4.2)
6. Prove trigonometric identities. (4.3, 5.3)
7. Solve right and oblique triangles. (6.1–6.4)

Core Objectives:

Communication Skills:

effective development, interpretation, and expression of ideas through written, oral, and visual communication.

- Develop, interpret, and express ideas through written communication
- Develop, interpret, and express ideas through oral communication
- Develop, interpret, and express ideas through visual communication

Critical Thinking:

creative thinking, innovation, inquiry, analysis, evaluation, and synthesis of information.

- Generate and communicate ideas by combining, changing, and reapplying existing information
- Gather and assess information relevant to a question
- Analyze, evaluate, and synthesize information

Empirical and Quantitative Competency Skills:

the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

- Manipulate and analyze numerical data and arrive at an informed conclusion
- Manipulate and analyze observable facts and arrive at an informed conclusion

GRADING COMPONENTS

Class assignments will be given at the end of most class periods. This gives the student the opportunity of working on problems in the classroom prior to attempting the homework assignment. Class assignments will be open note, classmate, book, and professor. These class assignments are not only beneficial, but they should be easy points. Don't miss class or leave class, and take advantage of them.

Quizzes will be given toward the end of the semester when trigonometry becomes the primary focus. It is important for the students to KNOW each and every important trig identity and formula. Quizzes will take place at the beginning of the class period, and students will be aware that these quizzes will take place (no "pop quizzes").

Bonus Problems must be kept in an organized notebook. All problems must be complete in order to earn bonus points. You must earn at least a 90% on the bonus problem notebook in order to earn bonus points. Solutions are provided on Blackboard and in my notebook.

There will be a total of 3 major exams and 1 comprehensive final exam. There is no automatic provision for making up exams. Only under extreme circumstances (e.g., death in the family or hospitalization) will make-up exams be given, and these circumstances must be documented. The instructor should be notified prior to missing an exam. The final exam will replace one of the three lowest major exams, provided that it is higher.

Study: You should normally spend approximately 3 hours outside of class in study for each hour of lecture.

GRADING POLICY

All students will be required to complete class assignments/quizzes, 3 exams, and 1 comprehensive final exam.

Exam 1: 20%

Exam 2: 20%

Exam 3: 20%

Class Assignments/Quizzes: 15%

Final Exam: 25%

BONUS PROBLEMS

There are also recommended bonus problems available. Successful completion of these bonus problems will serve 3 purposes:

First, you can earn 5 points to each exam, if you complete all bonus problems. Completion of bonus problems includes showing all work (where applicable) without plagiarism. Students are encouraged to HELP each other, get assistance from free tutoring available, and get assistance from your instructor. The bonus problems are due at the beginning of each exam, but it is recommended that you complete the bonus problems by the lecture (review) before the exam. By doing this, you will get feedback and help on any problems. You will also get access to the solutions. Thus, you can correct these problems (if any) and use the available time for study.

Second, perfect practice makes perfect. Students that complete and understand the bonus problems should do well on the exams.

Third, students that complete the bonus problems will have the opportunity to abide by a more favorable grading scale, as seen below.

Grading Scale

GROUP 1

A: 88.5% or higher
B: 78.5% to 88.5%
C: 68.5% to 78.5%
D: 57% to 68.5%
F: less than 57%

GROUP 2

A: 90% or higher
B: 80% to 90%
C: 70% to 80%
D: 60% to 70%
F: less than 60%

GROUP 1 students must satisfy the following conditions: 2 or fewer absences, complete bonus problems for every exam, demonstrate strong work ethic in the classroom.

Lab assignment deductions: 5 percentage points:

Tardiness or Leaving Early (5 minutes late)
Disrespect for fellow students or professor
Falling asleep in class
Cell-phone ringing/vibrating during class.

25 percentage points:

Cell-phone use during class, such as texting.

MATH2414 – COURSE OUTLINE	
January 18	Assessment
January 23	Lines in the plane – Section 1.1 Functions – Section 1.2
January 25	Combinations of functions – Section 1.5 Inverse functions – Sections 1.6
January 30	Quadratic functions – Section 2.1 Complex numbers – Section 2.4
January 29	Polynomial functions – Sections 2.2, 2.3, and 2.5
February 1	Rational functions – Sections 2.6 and 2.7
February 6	Review
Wednesday, February 8	EXAM 1-Chapters 1 and 2
February 13	Logarithmic and Exponential Functions –Ch 3
February 15	Conics/Parabolas – Section 9.1 Ellipses – Section 9.2
February 20	Ellipses continued – Section 9.2 Hyperbolas – Section 9.3
February 22	Radians and Degrees – Section 4.1 Trig Functions: Unit Circle – Section 4.2
February 27	Right Triangle Trig – Section 4.3 Trig Functions of Any Angle – Section 4.4
March 1	Graphs of Sine & Cosine Functions – Sect. 4.5 Graphs of Other Trig. Functions – Sect. 4.6
March 6	Inverse Trig. Functions – Section 4.7/Review
Thursday, March 8	EXAM 2-Chapters 3, 9, and 4
March 20	Fundamental Identities – Section 5.1
March 22	Verifying Fundamental Ident. – Section 5.2
March 27	Solving Trig. Identities – Section 5.3
March 29	Sum & Difference Formulas – Section 5.4
April 3	Multiple-Angle & Product-Sum Formulas – Section 5.5
April 5	Law of Sines – Section 6.1 Law of Cosines – Section 6.2
April 10	Review
Thursday, April 12	EXAM 3 – Chapters 5 and 6
April 19	Binomial Theorem – Section 8.5
April 18	Advanced Trig Applications-Handout
April 24	Vectors & Parametric Eq – Chapter 8 and 9
April 26	Chapter 9 or final review
May 2	Final Review
Monday, May 8	FINAL EXAM: 3:15-5:15pm