

Southwest Christian Pre-Calculus 2015-2016

I. **Southwest Christian's mission statement:** To challenge students to grow in knowing, loving, and serving God and others.

II. **Course Description:**

Pre-Calculus gives students an opportunity to thoroughly cover the topics of pre-calculus which are pre-requisites for either Calculus or other college courses. Students will be working with topics algebraically, graphically, and numerically, allowing them to use different methods to find the same result. Students will become comfortable working with a graphing calculator and will be able to apply their knowledge and skills to real-world problems.

III. **Carrie Top** **School: (507) 442-4471** **carrietop@swmch.org**

IV. **Philosophy:**

I have always been amazed at the complexity and the integration of mathematics within itself and our everyday lives. God truly has designed this world in such a way that we get to learn to unfold some of the details. I am excited to be able to share that joy with you and be able to help you learn and be successful throughout the year. In order to fully understand the complexity that math offers, students will be asked to problem-solve, prove, and work through difficult problems on a regular basis. As stated, I find the integration of mathematics amazing and I hope to share that through real-world application projects. Students will be able to go outside of the school walls and share with their classmates how a specific concept is found in everyday life.

Through the study of mathematics, students will be aware of order, patterns, and space in the created world. This pursuit will be accomplished by students computing, reasoning, and analyzing numbers, shapes and situations. These activities encourage students to better understand God as the Creator and Sustainer of this orderly world. God also calls us to be stewards of what he has given us. As stated by Dean Schlicter, "Go down deep enough into anything and you will find mathematics." Understanding the mathematics behind our world allows us to become better stewards of the time, energy, and resources that God has granted us to further his kingdom.

V. **Course Standards/Goals**

Skills and Knowledge:

Numbers and Operations: Students will understand and use concepts of numbers and their number system.

*Understand numbers, ways of representing numbers, relationships among numbers, and number systems.

*Understand meanings of operations and how they relate to one another.

*Compute fluently and make reasonable estimates.

Algebra, Functions, and Patterns: Students will use algebraic concepts, functions, patterns, and relationship to solve problems.

- *Understand patterns, relations, and functions.
- *Represent and analyze situations and structures using algebraic symbols.
- *Use mathematical models to represent and understand quantitative relationships.
- *Analyze change in various contexts.

Data Analysis, Statistics, and Probability: Students will use data collection and analysis techniques, statistical methods, and probability to solve problems.

- *Formulate questions that can be addressed with data and collect, organize, and display data to answer them.
- *Select and use appropriate statistical methods to analyze data.
- *Develop and evaluate inferences and predictions that are based on data.
- *Understand and apply basic concepts of probability.
- *Create and use representations to organize, record, and communicate mathematical ideas.
- *Understand how mathematical ideas interconnect and build on one another to produce a coherent whole.
- *Use the language of mathematics to express mathematical ideas.

Value: Students will recognize that mathematics is a language and tool provided by God. Students will recognize God's characters of logic and order in our world. Students will see the aesthetics of mathematics as reflecting the mind of God as Creator.

VI. Course Texts, Readings, and Materials

Larson, R. (2014). *Precalculus with Limits* (3rd ed.). N.p.: Cengage Learning.

GOOGLE CLASSROOM ACCESS CODE: **oy4cv1**

VII. Assessment: Assessment will be based on homework, tests, quizzes, and projects throughout the year.

Daily work: Students will have daily homework based on completion. Each section will score 1-3 points. Students will be required to show work and complete all assigned problems to earn 3 points. Late work will be accepted with a point deduction for every two days it is late, but will be required to complete each assignment.

Homework quizzes: Students will be able to check their answers throughout the week and will be given a homework check periodically throughout each chapter. This will consist of 5 - 10 problems from the homework assigned that chapter. Because students are allowed to check their answers, work will be required. Each question is worth 3 points. This is be added to the homework grade for the quarter.

Projects: Projects will be part of the curriculum throughout the year in various forms. Some projects will be individual whereas others will be group. When working in a group, you will be asked to do a self-reflection and a group-reflection that will factor into your grade.

Family of Curves: Students will use computer software to create mathematical art using the transformations of various functions.

Applications: Students will be in partners and will be assigned a chapter at the beginning of the year. When it is the given chapter, students are to research and find ways in which the concepts covered are found outside of the classroom walls. Students will then give a presentation to the class after the chapter test.

Math Fair: There is so much to learn about advanced math topics that cannot be covered. Students will be given the opportunity to further research a topic studied in class or a mathematical topic of interest. They will be able to present their findings in the form of a fair.

Other projects may be added throughout the year.

Tests and Quizzes: Tests will be taken at the end of each chapter. Quizzes will be periodically taken throughout each chapter.

It is my belief that learning can occur through mistakes and so retakes will be offered on tests and quizzes. In order to retake the assessment students must correct the mistakes on the given test/quiz, complete two extra problems from each section, and meet with me to go over concepts and schedule a retake within a week that the assessment was handed back.

Challenge Problems: Extra credit is offered through different challenge problems throughout the chapter and will be due at the end of the chapter. Each problem is worth one point and the total will be added at the end of each quarter.

VIII. Policy:

All assignments are designed to show whether students have met the standards for the course. Any unit test, quiz, project, or homework check assessed as “poor quality” will be expected to be REDONE for higher credit.

Be Respectful, Ready, Responsible, and Positive.

Respect God, others, and yourself.

Be *ready* to learn. Ask questions.

Students will be in their seat ready for the day by the time the bell rings.

Set expectations for yourself.

Be *responsible* for your actions in and outside the classroom.

Have a *positive* outlook and encourage your classmates.

Computers (or any device) will be put away or closed when not necessary for the class. Many days, students will be asked to complete a bell ringer on the computer. As soon as the bell ringer is completed, computers must go back in their case. During a time where the student is finished with the assigned task for the class, permission must be granted to use for other classes or reading material (such as a Nook). Failure to follow may result in the computer taken just as the school phone policy.

IX. Distribution of Grading Components

Quarter Grade: Homework = 40% Tests/Projects/Quizzes = 60%	Semester Grade: Quarter 1 = 42.5% Quarter 2 = 42.5% Exam = 15%
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X. Grading Scale

A	100-95	C	79-77
A-	94-92	C-	76-74
B+	91-89	D+	73-71
B	88-86	D	70-68
B-	85-83	D-	67-65
C+	82-80	F	64 or below

XI. Topics Covered (tentative):

- 1) Functions and Their Graphs

- 2) Polynomial and Rational Functions

- 3) Exponential and Logarithmic Functions

- 4) Trigonometry

- 5) Analytic Trigonometry

- 6) Additional Topics in Trigonometry

- 7) Systems of Equations and Inequalities

- 8) Sequences, Series, and Probability

- 9) Limits and Introduction to Calculus