

PRE-CALCULUS Syllabus 2016-2017

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| INSTRUCTOR | Don Aldrich | Days/Period: | 10:16 – 11:15 Mon, Wed, Fri; 10:16 – 10:46 Tue & Thur. |
| PREREQUISITE | Algebra I, Geometry, Algebra II or at the discretion of the instructor | Duration: | Semester 1 and 2 |
| TEXTBOOK | Brooks/Cole: Pre-calculus with Limits; A graphing Approach by Larson, 6 th edition copyright 2012 | | |
| CONTACT INFO. | Schedule for office and classroom: 7:30 – 4:30 Mon –Thur. 7:30 – 3:00 Fri. or by appointment, Instructor: Don Aldrich Telephone: (269) 339 – 3362(H) Please do not call my home after 10:00 p.m. 269-965-1278 Ext 1029 Classroom, daldrich@battlecreekacademy.com | | |

PURPOSE OF COURSE: To teach of Jesus through the study of higher levels of order and compilation of knowledge bases through Pre-Calculus. To prepare students for career choices that include higher order and progressive skills or for the advancement into college math.

CONTENT DESCRIPTION: An optional course designed to develop skills for the study of Calculus topics in discrete mathematics. Topics include but are not limited to function, analysis, analytic geometry and trigonometry, vectors, matrices, and an introduction to limits. It is strongly recommended for students planning careers requiring higher mathematical skills.

REQUIRED TOOLS FOR SUCCESS: Text, composition book, calculator (Ti-83 or higher is suggested), pencils, erasers, ¼ inch graph paper.

EXPECTATIONS OF STUDENTS:

1. Be on-time for class: Attendance is of the utmost importance. If you are not in the classroom then there is no learning. You are expected to be in your seat with materials ready when the bell rings.
2. Return Assignments Timely: Homework, in-class assignments, projects, or any other means of you communicating your understanding of the topic is expected to be turned in at the specified time. Allowance for late work is at the discretion of the instructor. Be prudent in managing and organizing your time.
3. Attempt All Assignments: Your input to each area of discovery and study is of vital importance. **ALWAYS** try to accomplish something towards the final objective. This will enhance your experience and give life-long skills.
4. Complete All Assignments: Completeness gives a sense of well-being and accomplishment. Do **YOUR BEST** in all. Try **EVERYTHING**. Understanding takes time, effort, and willingness. Your best and complete attempt will make an impact on the outcome. **NEVER** give up!! If at any time you have questions and you have exhausted all possibilities of answering, feel free to come by my office during the hours listed or send an e-mail. We will find a way to gain understanding. This is a cooperative venture and the end result is up to you.

COURSE FOCUS

PC.1 Identify SDA Christian principles and values in correlation with mathematics.

PC.1.1 Recognize God as Creator and Sustainer of an ordered universe.

PC.1.2 Value God's inspired writings and created works as a revelation of His precision, accuracy, and exactness.

PC.1.3 Develop accountability as expressed in God's word and laws.

PC.1.4 Employ Christian principles as a basis for learning and growth.

PC.1.5 Broaden intellectual abilities through the study of mathematics.

PC.1.6 Make biblically-based choices when dealing with mathematical data.

PC.1.7 Apply biblical principles of Christian morality, integrity, and ethical behavior to mathematical processes.

COURSE ABILITIES

PC.2 Develop abilities in mathematics.

PC.2.1 Understand mathematical concepts (number sense, algebraic and geometric thinking, measurement, data analysis, and probability).

PC.2.2 Utilize the problem-solving process (explore, plan, solve, verify).

PC.2.3 Develop higher thinking skills (analyze, evaluate, reason, classify, predict, generalize, solve, decide, relate, interpret, simplify, model, synthesize).

PC.3 Be able to apply math knowledge and skills to a variety of purposes.

PC.3.1 Use a variety of strategies in the problem-solving process (patterns, tables, diagrams, etc.).

PC.3.2 Conduct research (locate, observe/gather, analyze, conclude).

PC.3.3 Perform calculations with and without technology in life situations.

PC.3.4 Read critically and communicate proficiently with mathematical vocabulary.

COURSE CONTENT

PC.4 Be able to understand concepts of functions.

PC.4.1 Characterize, classify, and transform functions (even, odd, periodic, piece-wise, continuous, translations, stretches, and compressions).

PC.4.2 Demonstrate knowledge of limits (definition, properties, finite, infinite).

PC.5 Be able to represent mathematical relationships and situations.

PC.5.1 Verify trigonometric identities.

PC.5.2 Write and graph rectangular and parametric equations.

PC.5.3 Identify, graph, and interpret various functions (polynomial, inverse, trigonometric, logarithmic, exponential, etc.).

PC.5.4 Present data using statistics and probability (regressions, counting techniques).

PC.5.5 Illustrate and explore characteristics and operations connecting sequences and series.

PC.6 Be able to apply appropriate techniques, tools, and formulas to interpret and solve problems.

PC.6.1 Solve systems of equations and inequalities using graphs, algebraic methods, and matrices.

PC.6.2 Solve higher order equations and inequalities from written and oral expression, recognizing equivalent forms.

PC.6.3 Solve exponential and logarithmic equations.

PC.6.4 Perform operations involving polynomials, functions, rational expressions, vectors, and matrices.

PC.6.5 Decompose fractions into parts.

PC.6.6 Demonstrate mathematical proficiency using a graphing utility.

PC.7 Be able to analyze results and draw appropriate conclusions.

PC.7.1 Find and interpret information from graphs, charts, and numerical data.

PC.7.2 Predict patterns and generalize trends.

PC.7.3 Analyze and write equations for conic sections.

PC.7.4 Judge meaning, utility, and reasonableness of findings in a variety of situations, including those carried out by technology.

ASSESSMENT AND GRADING

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| EACH NINE WEEKS: | 45% | Points accrued divided by Points Possible |
| SEMESTER EXAM: | 10% | Adjusted to each Nine week grading period |
| GRADING SCALE: | As outlined in the Handbook | |

Please note there is not a breakdown for quizzes, tests, homework, in-class work, projects or any other means of producing understanding. I believe that everything we do for this class has an impact on your understanding. Therefore, everything has the same level of importance.

SEQUENCE FOR THE YEAR

IMPORTANT: The textbook is a resource; it does not determine the content of the course though it may influence the sequence of the topics.

QUARTER 1 OUTLINE

A review and connection of Algebra II concepts as we introduce functions and their graphs. Lines in the plane, functions, graphs of functions, shifts, reflections, stretches, combinations, and inverse functions are explored. Linear models scatter plots, quadratics, polynomial functions, real zeros, complex numbers, rational functions and their graphs, asymptotes, and the Fundamental Theorem of Algebra are discussed. Also explored are exponential and logarithmic functions and their graphs, logarithmic properties, exponential and logarithmic models as well as solving equations with logarithms.

QUARTER 2 OUTLINE

A short review of basic trig functions from Geometry and then exploration into polar coordinates, radian and degree measure, right triangle trig, graphs of sine and cosine functions and other trig functions. Utilization of inverse functions, fundamental identities of trig, verification of identities, solving trig equations, sum and difference formulas, multiple angle and product-to-sum formulas are also explored. Trig forms of complex numbers, law of sines and cosines, vectors in the plane as well as vectors and the dot products will complete the semester.

QUARTER 3 OUTLINE

Linear systems, matrices, multivariable systems, systems of equations, operations with matrices, determinants, sequences, series, geometric sequence and series, arithmetic sequence and series, binomial theorem, Pascal's triangle, probability and counting principles as well as circles, parabolas, ellipses, hyperbolas, and parametric are presented during this timeframe.

QUARTER 4 OUTLINE

Polar coordinates and their graphs, polar equations of conics, three-dimensional coordinate system, vectors in space, cross product of two vectors, lines and planes in space, limits, evaluation of limits, techniques for evaluation, tangent line problems, limits at infinity and sequences, and the area problem complete the year.

This is a tentative syllabus and is subject to change as the progress of the student allows or as time permits. Thank you for your understanding.