

University of Alaska Southeast

MATH 151-J01

College Algebra for Calculus

Fall 2015

Instructor Information:

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Office hours: MTWR 1:30-3:00 or by appointment.
Course Website: <https://online.uas.alaska.edu/online/>

Course Prerequisite: MATH 105 (with a C grade or better) or Placement Test. If you are unsure about satisfying the prerequisite, then please ask.

Course Text: *PreCalculus*, 7th Edition, by Cohen, Lee and Sklar. Brooks Cole, 2012.

Course Description: A detailed study of linear, quadratic, rational, radical, exponential, and logarithmic functions; operations on and applications of these functions, and selected topics from algebra.

Objective: Math 107 students should develop an understanding of mathematical concepts and techniques which can be used to formulate and solve quantitative and analytical problems. These concepts and techniques, and the critical thinking their use requires, can be generalized to other academic disciplines and applied in professional careers.

Assessment of Competencies:

Quantitative Skills will be assessed by assignment of homework problems and examination questions, which require a variety of mathematical concepts and techniques for their solution.

Critical Thinking will be assessed by assignment of homework problems and examination questions that require mathematical problem solving.

Student Learning Outcomes: The UAS Online course website has a link to the Student Learning Outcomes.

Procedure: Each class will include review and discussion of assigned work and introduction of new material. Questions and discussions are encouraged. Assignments and other details will be announced in class and/or posted on the course web site. You may access the course website via UAS Online.

Student Responsibilities: Students are expected to read the text, attend all classes, take examinations at designated times, and complete homework assignments. Successful completion of homework assignments does not necessarily imply mastery of the material. Students may find it necessary to do more problems and seek assistance outside of class to ensure success in the class. Unless specifically excluded, all topics covered in relevant sections of the text are fair game on tests. Be ready to be tested on problems which extend ideas and synthesize concepts covered in class and the text.

Homework: Homework problems will be assigned in class and will be due at the next class meeting. To receive full credit for homework it must be legible, complete, and correct. Credit will not be given without work that supports the results. Three randomly selected problems will be graded from each assigned problem set. The four lowest homework scores will not be considered for the final homework grade. Late homework will not be accepted for credit. Students are encouraged to work together to complete homework.

Course Number: MATH 151
Course Title: College Algebra
Credits: 4 (University of Alaska Southeast)
Prerequisites: MATH 105 with a "C" or better/Placement on ASSET Exam
Course Description: Study of fundamental concepts, equations and inequalities

Course Length: Two Semesters (36 weeks)
Contact Hours: 130 hours
Start/Stop Dates: 08/27/15 to 05/25/16
Location: Wrangell High School
Instructor: Patricia Gilbert
Text: *College Algebra*
Lial, Hornsby and Schneider
Fourth Edition
Addison Wesley Longman Publishing

Course Outline:

Preliminaries and Review of Algebra, Algebraic Expressions (weeks 1- 6)
Real numbers and their properties; order and absolute values; polynomials and the binomial theorem; factoring polynomials; rational expressions; rational exponents; and radical expressions.

Equations and Inequalities (weeks 7 - 10)
Linear equations; linear applications and modeling; complex numbers; quadratic equations; quadratic applications and modeling; inequalities; absolute value equations; and absolute value inequalities.

Relations, Functions, and Graphs (weeks 11 - 16)
Relations and the rectangular coordinate system (circles); functions and functional notation; linear functions; equations of lines: curve fitting; graphs of relations and functions; graphing techniques with graphing calculators; increasing, constant and decreasing functions; general graphing techniques; and composite functions.

MidTerm Review & Exam (weeks 17 - 18)

Polynomial and Rational Functions (weeks 19 - 24)
Polynomial and rational functions; synthetic division and roots of polynomial and rational functions; the rational root test; quadratic functions and their graphs; applications of quadratic functions; graphs of polynomial functions; polynomial and rational inequalities; and Descartes' Rule of Signs

Exponential and Logarithmic Functions (weeks 25 - 30)
Radicals and rational exponents; radical equations; exponential functions; compound interest and the number e ; the natural logarithmic function; logarithmic functions to other

bases; exponential and logarithmic equations; rationalizing numerators and denominators and inverse functions.

Systems of Equations and Inequalities (weeks 31 - 34)

Systems of linear and non linear equations in two and three variables, linear applications and modeling; matrix methods, determinants and Cramer's Rule, Higher order determinants, systems of inequalities, and non linear systems of equations.

Conic Sections (week 35) If time permits

Parabolas and circles; ellipses and hyperbolas; and nonlinear systems of equations

Sequences, Series, and the Binomial Theorem (week 35) If time permits

Sequences and series; arithmetic sequences and series; geometric sequences and series.

Final Exam Prep (weeks 35 - 36)

Grade Scale:

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| A | 100% - 90% |
| B | 89% - 80% |
| C | 79% - 70% |
| D | 69% - 60% |
| F | 59% - 0% |

Evaluation:

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| 50% | Chapter Tests |
| 25% | Mid Term Exam (Cumulative) |
| 25% | Final Exam (Cumulative) |

Academic Honesty:

Each student is expected to abide by the academic honesty policies as described in the WHS and UAS Student Code of Conduct.

http://www.uas.alaska.edu/student_services/handbook.html

Any work submitted by a student in this course for academic credit will be the student's own work. You are encouraged to study together and to discuss information and concepts. You can give "consulting" help to or receive "consulting help" from other students.

During examinations you must do your own work. Talking or discussion is not permitted during examinations nor may you compare papers, copy from others, collaborate in any way, access written notes or information via the internet or other electronic means (unless specifically permitted for that assignment). Any collaborative behavior or attempts to access external information (other than by means specifically allowed) will result in failure of the exam and may lead to failure in the course and University disciplinary action.

Incomplete Grades:

Incomplete grades may be negotiated by students in good standing who experience illness, family illness, or required travel for their jobs during the course period. Good standing implies regular "attendance" and consistent effort toward reaching course goals. Incomplete grades will not be given for non-attendance or for failure to communicate with the instructor. Students who are not current with assignments and have not withdrawn by the appropriate date will be given a grade of "NB" or an instructor's withdrawal. Incomplete grades are not routinely given and are reserved only for students who experience extreme difficulties over which they have no control. Students who miss a significant amount of time will be encouraged to re-register for the course at a later date rather than take an incomplete grade.

Accommodations/Special Needs:

Wrangell High School and the University of Alaska will provide a learning environment in which no student will be subjected to unlawful discrimination based on disability. No otherwise qualified individual will be denied reasonable access to, participation in, or the benefits of, any program or activity operated by Wrangell High School and the University of Alaska because of disability. Each qualified student with a disability will be eligible to receive appropriate academic adjustments and programmatic accommodations necessary for the student to access educational opportunities, programs, activities, or services in the most integrated setting possible.