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NUAMES

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WEBER STATE UNIVERSITY

CONTINUING EDUCATION
CONCURRENT ENROLLMENT

Attention: Contact the College or University you wish to attend to confirm this Concurrent Enrollment course will meet your goals for fulfilling General Education requirements or will count toward your chosen major.

Course Syllabus (revised 7/2017)

Course Title:	CE/MATH1050 – College Algebra
Course Schedule:	1 semester (4 credits through Weber State University, satisfies the QL Requirement)
Required Text:	<i>Algebra and Trigonometry</i> by Michael Sullivan, 8th Edition, Pearson, ISBN 0-13-232903-4.
Web Resources:	http://www.cbennett.nuames.org/
Instructor's Name:	Cory Bennett
Telephone (School):	(801) 402-5920
School Address:	2750 N. University Park Blvd. Layton, UT 84041
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Availability:	Monday-Thursday 2:40 - 3:15 PM

Welcome and Course Overview

Welcome to the world of vast possibilities opened to you by taking Math 1050. This course equips you with the understanding of college algebra needed for so many advanced courses in mathematics and the sciences. We hope you fully embrace this opportunity to prepare for your journey to become a mathematician, a scientist, a researcher, a business person, an engineer, or any number of other exciting thinkers. This course covers a survey of college mathematics and is also a preparatory course for calculus. Topics from continuous mathematics include polynomial, rational, exponential and logarithmic functions, equations and their applications, absolute value, polynomial and rational inequalities, and nonlinear systems. Topics from discrete mathematics include matrices, matrix algebra and inverses, determinants, sequences and series. In addition mathematics of rational functions, partial fraction decomposition and the binomial theorem will be covered.

Prerequisites

'C' average or better in each course: Secondary Math I, Secondary Math II and Secondary Math III.	AND one of the following	23 or higher on the Math portion of the ACT OR ALEKS score of 55-100 OR Math ACCUPLACER: CLM score of 50 or above
OR	'C' or better in Math 1010	
See: http://www.weber.edu/placement/math.html for more placement information		

Instructor Bio

My name is Cory Bennett and this is my eleventh year teaching mathematics at NUAMES. During my summers, I train and consult for PowerSchool. I am widely traveled during that time, giving presentations and seeing my family. I also instruct math courses for the Apollo group (University of Phoenix) online and local classes. I have taught mathematics and computer science (among other subjects) for over 30 years in the public education system. I spent most of my time in Idaho pausing briefly to get my MS in Mathematics/Computer Science Education from Oregon State. I had some great experiences working with the students as an athletic coach, musical (stage) director and academic champion. During these years, I also taught community education, instructed college courses, and did commercial application software training and consultation. I also spent three years teaching mathematics at Adele C. Young Intermediate in Brigham City.

My wife and I are parents to six children and twenty-two lovely grandchildren. We live right on the mountain. This affords me a scenic view of the valley and of the Great Salt Lake. There are also miles and miles of trails to hike, and I love to hike and bike! When I have spare time, I work in the yard and with our gardens as well recreate in our RV.

CONTENT

Chapter 1 Equations and Inequalities

Section 1.6 Equations and Inequalities Involving Absolute Value

Chapter 3 Functions and Their Graphs

Section 3.1 Functions

Section 3.2 The Graph of a Function

Section 3.3 Properties of Functions

Section 3.4 Library of Functions; Piecewise-defined Functions

Section 3.5 Graphing Techniques: Transformations

Chapter 4 Linear and Quadratic Functions

Section 4.3 Quadratic Functions and Their Properties

Section 4.4 Quadratic Models; Building Quadratic Functions from Data

Section 4.5 Inequalities Involving Quadratic Functions

Chapter 5 Polynomial and Rational Functions

Section 5.1 Polynomial Functions and Models

Section 5.2 Properties of Rational Functions

Section 5.3 The Graph of a Rational Function
Section 5.4 Polynomial and Rational Inequalities
R.6 Synthetic Division
Section 5.5 The Real Zeros of a Polynomial Function
Section 5.6 Complex Zeros; Fundamental Theorem of Algebra

Chapter 6 Exponential and Logarithmic Functions

Section 6.1 Composite Functions
Section 6.2 One-to-One Functions; Inverse Functions
Section 6.3 Exponential Functions
Section 6.4 Logarithmic Functions
Section 6.5 Properties of Logarithms
Section 6.6 Logarithmic and Exponential Equations
Section 6.7 Compound Interest
Section 6.8 Exponential Growth and Decay Models; Newton's Law; Logistic Growth and Decay Models

Chapter 12 Systems of Equations and Inequalities

Section 12.1 Systems of Linear Equations; Substitution and Elimination
Section 12.2 Systems of Linear Equations; Matrices
Section 12.3 Systems of Linear Equations; Determinants
Section 12.4 Matrix Algebra
Section 12.5 Partial Fraction Decomposition
Section 12.6 Systems of Nonlinear Equations

Chapter 13 Sequences; Induction; the Binomial Theorem

Section 13.1 Sequences
Section 13.2 Arithmetic Sequences
Section 13.3 Geometric Sequences; Geometric Series
Section 13.4 Mathematical Induction (time permitting)
Section 13.5 The Binomial Theorem

GRADING CATEGORIES (BASED ON WEIGHTED GRADES)

Tests. There will be an evaluation at the conclusion of most chapters. There are five tests which are worth 100 points each. Tests resulting in a poor performance may NOT be made up. Chapter tests make up 25% of the overall grade.

Quizzes. There will be one or two quizzes in each chapter for a total of 10 scheduled quizzes, to assess a student's current comprehension of the material. The points per quiz will vary depending on the number of questions on the quiz. Quizzes make up 15% of the overall grade.

Homework/Assignments. There will be a daily assignment, which may be completed in class, but generally will be done outside the classroom. Appropriate documentation (work) **must** accompany the answers for full credit. Homework submitted by the due date is worth up to 5 points per assignment. Homework/Assignments make up 10% of the overall grade.

Mid-Term and Final Exam. There will be comprehensive **timed** exams at the midterm and at the end of the course. The final exam is prepared by the Weber State University Mathematics and Statistics Department. Only in the case of extenuating circumstances, approved by the school and course instructor, will students be allowed to re-schedule an exam time. The midterm constitutes 20% and the final exam makes up 30% of the overall grade.

Extra Credit. There is no extra credit available for this course.

POLICIES AND PROCEDURES

Grading Policy

A grade of C or better is considered passing and meets the prerequisite for the next math course.

Regardless of overall score in the course, students must have a weighted exam average* of 65% to pass the course. It is the Weber State University Math Department policy that students attaining a weighted exam average less than 65% shall receive a grade no higher than a D for the course.

Students who earn a C-grade in the course and also pass the weighted exam average with better than a 65% may receive a C for the course at the individual teacher's discretion based on overall effort and performance in the course.

*The weighted exam average is computed by giving 40% weight to the WSU Midterm and 60% weight to the WSU Final.

Attendance and participation

Students should be in their seats at the start of class. All preparation, including the gathering of materials should be done prior to start of class. Materials include book, notebook, pencils, and calculator (when appropriate). Students should be ready to work at the start of class, and not preparing. The citizenship grade will be decreased one level after the third tardy of the term. On the fifth tardy, the citizenship grade will become a 'U'. **Since the pace of the course is demanding, excessive absences or tardies could obviously diminish one's grade.**

Students are expected to be active in class discussions during the presentation session. Adequate time will generally be allowed during class to work on an assignment. Students should be doing their work in class during the time allotted. Sidebar conversation is discouraged during the presentation of material.

Use of electronic devices, including cell phones, PDA's, and media players is forbidden, as they provide distraction to the educational environment. Such devices will be confiscated according to school policy. Calculators may be used during the work session, as is appropriate.

Use of calculators

No graphing calculators are permitted in this course. I recommended the TI-36X Pro, which is a scientific calculator, and has sufficient functionality for this course.

Late assignments

Late assignments are penalized at 20% per day but will not be accepted after 4 class periods.

Feedback

Grades will be posted daily and made available for student and parental review on the Davis Schools web site (<http://www.davis.k12.ut.us/>). Student may request a hardcopy progress report from the instructor at any time.

Academic Honesty

Academic honesty is highly valued at the NUAMES. You must always submit work that represents your own efforts. While it is appropriate to work with others in obtaining a solution, it is inappropriate to copy directly and submit it as your own work.

Management.

Students are expected to adhere to the school and class rules. Deviations and distractions will be dealt with accord to school policy. Certain additional rules may be applied to adhere to the Weber State Campus Code of Conduct.

Web Resources

On the web site <http://www.cbennett.nuames.org/> there are the following resources:

- schedule of assignments
- class note
- Weber State University Canvas: <https://cas.weber.edu>
- Weber State tutoring services are also available: WSU Davis Room D2 214

WSU Drop Policy

It is the responsibility of the student to understand that according to WSU Concurrent Enrollment policy, a decision to drop a CE Math course must be finalized September 18. After that, students can withdraw from the class until October 13 and will receive a 'W' on their college transcript. Beyond this point, a student will receive a grade for the course from the instructor at the end of the term. The grade received from this course becomes part of a **permanent college transcript** at WSU. This transcript cannot be altered at any future point in time.

Accommodations

Any student requiring accommodations or services due to a disability must contact Services for Students with Disabilities (SSD). For more information see the website: weber.edu/ss or contact their office in the Student Services Center, Room 181 or call 801-626-6413. SSD can also arrange to provide course materials (including syllabus) in an alternate formats if necessary.

Grade Scale (as provided by WSU)

Grade	Percent range	Remarks
A	93 - 100	Excellent work.
A-	90 - 92	
B+	87- 89	Good work.
B	83 - 86	
B-	80 - 82	
C+	77 - 79	Below class expectations. Usually given as a consolation for lack of performance.
C	73 - 76	
C-	70 - 72	
D	60 - 69	Poor performance. Does not meet class expectations.
E (F)	0 - 60	Failing

Schedule of Assignments (subject to change)

Session	Topic	Assignment
0	Review of Algebraic Concepts	15: 9-19 (odd) 26: 65,73-78,90-94 48: 35,57-61,89-93 56: 25,33,39-41,77,92,93
1	Review of Algebraic Concepts	69: 11-15,21,25,33,43,47,61,63,73,79,85 77: 8,15-18,31-33,46,47,62,63,71
2	Section 1.6 Absolute Value ✓ Solve Equations with Absolute Value ✓ Solve Inequalities with Absolute Value	138: 7, 10, 11, 13, 20, 21, 27, 28, 33, 39, 43, 46, 56, 60, 65, 73
	Quiz 1	
3	Section 3.1 Functions ✓ Relations ✓ Value of a Function ✓ Domain of a Function ✓ Operations on Functions	219: 15, 16, 21, 24, 33, 34, 39, 44, 45, 48, 49, 51, 56, 63, 68, 69, 75
4	Section 3.2 Graph of a Function ✓ Graph of a Function ✓ Information from a Graph	227: 9, 11, 14, 15, 18, 19, 20, 24, 25
5	Sections 3.3 Properties of Functions ✓ Odd or Even ✓ Increasing, Decreasing, or Constant ✓ Local Max and Min ✓ Average Rate of Change	239: 21, 24, 26, 27, 29, 33, 35, 38, 42, 53, 54, 59
6	Sections 3.4 Library of Functions; Piecewise Functions ✓ Square, Cube, Roots, Absolute Value Functions ✓ Piecewise Functions	249: 17-25, 28, 31, 36, 41, 42, 47
	Quiz 2	
7	Section 3.5 Graphing Techniques ✓ Vertical and Horizontal Shifts ✓ Compressions and Stretches ✓ Reflections about x- and y-axes	261: 8, 9, 13, 17, 19, 22, 23, 27, 28, 31, 32, 39, 41, 49, 52, 66

	Test 1	
8	Section 4.3 Quadratic Functions <ul style="list-style-type: none"> ✓ Graph Quadratic Function ✓ Vertex, Axis of Symmetry ✓ Intercepts ✓ Max and Min Values 	302: 11, 14, 21, 27, 30, 33, 35, 38, 46, 49, 61, 64
9	Section 4.4 Quadratic Models <ul style="list-style-type: none"> ✓ Solve Applied Problems 	310: 3, 6, 8, 9, 11abcf, 13, 19
10	Section 4.5 Inequalities Involving Quadratic Functions <ul style="list-style-type: none"> ✓ Solve Inequalities 	316: 3, 6, 7, 10, 13, 15, 18, 21, 29, 31, 34
	Quiz 3	
11	Section 5.1 Polynomial Functions <ul style="list-style-type: none"> ✓ Degrees of Polynomial Functions ✓ Graph Polynomial Functions with Transformations ✓ Finding Real Zeros; Multiplicity ✓ Analyze Graph of Polynomial Function 	340: 14, 15, 17, 18, 20, 27, 30, 31, 39, 45, 50, 57-60, 62, 77, 99abef
12	Section 5.2 Properties of Rational Functions <ul style="list-style-type: none"> ✓ Domain ✓ Vertical Asymptotes ✓ Horizontal or Oblique Asymptotes 	352: 12, 13, 15, 21, 23, 26, 36, 41, 44, 45, 46, 49
13	Section 5.3 The Graph of a Rational Function <ul style="list-style-type: none"> ✓ Analyze the Graph of a Rational Function ✓ Solve Applied Problems 	366: 7, 10, 15, 18, 21, 26, 29, 33, 37, 40, 45, 46
	Quiz 4	
14	Section 5.4 Polynomials and Rational Inequalities <ul style="list-style-type: none"> ✓ Solve Polynomial Inequalities ✓ Solve Rational Inequalities 	373: 3, 8, 12, 15, 18, 21, 26, 27, 30, 33, 38, 53

15	R.6 Synthetic Division <ul style="list-style-type: none"> ✓ Divide Polynomials Using Synthetic Division 	60: 9, 10, 13, 14, 19, 20, 26
16	Section 5.5 The Real Zeros of a Polynomial Function <ul style="list-style-type: none"> ✓ Remainder and Factor Theorems ✓ Descartes' Rule of Signs ✓ Rational Zeros Theorem ✓ Finding Real Zeros of a Polynomial ✓ Intermediate Value Theorem 	386: 11, 14, 17, 21, 25, 28, 33, 38, 45, 50, 53, 57, 62
	Quiz 5	
17	Section 5.6 Complex Zeros; Fundamental Theorem of Algebra <ul style="list-style-type: none"> ✓ Use Conjugate Pairs Theorem ✓ Find Polynomial Function with Specified Zeros ✓ Find the Complex Zeros of a Polynomial 	394: 7, 10, 17, 18, 22, 23, 25, 26, 33, 34, 38
18	Section 6.1 Composite Functions <ul style="list-style-type: none"> ✓ Form a composite function ✓ Domain of a composite function 	407: 7, 10, 11, 16, 19, 33, 36, 41, 45, 50
19	Section 6.2 One-to-One Functions; Inverse Functions <ul style="list-style-type: none"> ✓ Determining One-to-One Functions ✓ Inverse of a Function ✓ Graph of an Inverse Function ✓ Find the Inverse Defined by an Equation 	419: 9-22, 24, 29, 31, 36, 39, 41, 44, 49, 52, 55, 60, 63
	Quiz 6	
20	Review	Sections: 1.6, 3.1-3.5, 4.3-4.5, 5.1-5.6, R.6, 6.1,6.2
21	WSU Midterm Exam <ul style="list-style-type: none"> • Oct 17 • Oct 18 	in Class
22	Section 6.3 Exponential Functions <ul style="list-style-type: none"> ✓ Evaluate Exponential Functions ✓ Graph Exponential Functions ✓ Define e ✓ Solve Exponential Equations 	433: 21, 24, 30, 31, 39, 43, 53, 59, 64, 68, 71, 75, 81, 87, 91,103

23	<p>Section 6.4 Logarithmic Functions</p> <ul style="list-style-type: none"> ✓ Change Exponential Expressions to Logarithmic Expressions ✓ Evaluate Logarithmic Expressions ✓ Determine the Domain ✓ Graph Logarithmic Function ✓ Solve Logarithmic Function 	447: 27, 29, 64, 65, 71, 74, 79, 81, 84, 87, 92, 106, 123
24	<p>Section 6.5 Properties of Logarithms</p> <ul style="list-style-type: none"> ✓ Work with Properties of Logarithms ✓ Sum or Difference of Logarithms ✓ Write Expression as a Single Logarithm ✓ Evaluate Logarithm Whose Base is Neither 10 or e 	457: 7, 9, 14, 17, 33, 36, 43, 51, 55, 60, 65, 68, 71
25	<p>Section 6.6 Logarithmic and Exponential Functions</p> <ul style="list-style-type: none"> ✓ Solve Logarithmic Equations ✓ Solve Exponential Equations 	463: 9, 14, 21, 25, 31, 33, 36, 45, 50, 53
	Quiz 7	
26	<p>Section 6.7 Compound Interest</p> <ul style="list-style-type: none"> ✓ Simple Interest ✓ Compound Interest ✓ Effective Rate of Interest ✓ Working with Present Value Formulas ✓ Compounding Continually 	473: 3, 6, 11, 13, 18, 21, 25, 27, 28, 31, 36, 44
27	<p>Section 6.8 Exponential Growth and Decay Models</p> <ul style="list-style-type: none"> ✓ Equations of Populations with Uninhibited Growth ✓ Law of Decay ✓ Newton's Law of Cooling 	484: 1, 4, 5, 8, 9, 12, 13, 23
28	Review of chapter 6	496: (TBD)
	Test 2	
29	<p>Section 12.1 System of Linear Equations</p> <ul style="list-style-type: none"> ✓ Substitution ✓ Elimination 	847: (TBD)

30	<p>Section 12.2 System of Linear Equations: Matrices</p> <ul style="list-style-type: none"> ✓ Augmented Matrix ✓ Perform Row Operations ✓ Solve a System of Linear Equations Using Matrices 	862: 7, 11, 17, 20, 37, 42, 47, 52, 53, 58, 77
31	<p>Section 12.3 System of Linear Equations: Determinants</p> <ul style="list-style-type: none"> ✓ 2 x 2 Determinants ✓ Cramer's Rule ✓ 3 x 3 Determinants ✓ Properties of Determinants ✓ Solving Linear Systems Using Determinants 	873: 7, 11, 17, 20, 23, 33, 38, 40, 43, 51
	Quiz 8	
32	<p>Section 12.4 Matrix Algebra</p> <ul style="list-style-type: none"> ✓ Sum and Difference of Two Matrices ✓ Scalar Multiples ✓ Product of Two Matrices ✓ Inverse of a Matrix ✓ Solve a Linear System Using an Inverse Matrix 	889: 7, 11, 15, 20, 25, 31, 32, 37, 43, 44, 55, 59
33	<p>Section 12.6 Systems of Nonlinear Equations</p> <ul style="list-style-type: none"> ✓ Using Substitution ✓ Using Elimination 	904: 7, 12, 15, 29, 34, 37, 39, 43, 46
	Quiz 9	
34	Section 12.5 Partial Fraction Decomposition	898: 13-15,19-21,35-37,45,46
35	Review of chapter 12	922: (TBD)
	Test 3	
36	<p>Section 13.1 Sequences</p> <ul style="list-style-type: none"> ✓ Write First Several Terms of a Sequence ✓ Using a Recursive Formula ✓ Summation Notation ✓ Finding the Sum of a Sequence 	937: 11, 16, 17, 19, 22, 28, 29, 33, 35, 41, 44, 53, 56, 61, 64

37	<p>Section 13.2 Arithmetic Sequences</p> <ul style="list-style-type: none"> ✓ Find a Formula for an Arithmetic Sequence ✓ Find the Sum of an Arithmetic Sequence 	944: 5, 10, 15, 18, 20, 27, 32, 35, 42, 49, 57
38	<p>Section 13.3 Geometric Sequences and Series</p> <ul style="list-style-type: none"> ✓ Find a Formula for a Geometric Sequence ✓ Find the Sum of a Geometric Sequence ✓ Determine Whether the Function Converges or Diverges 	954: 11, 18, 19, 22, 26, 27, 31, 33, 36, 42, 43, 49, 52, 55, 58, 69, 74, 75, 91-94
	Quiz 10	
39	<p>Section 13.4 Mathematical Induction</p> <ul style="list-style-type: none"> ✓ Prove Statements Using Mathematical Induction 	960: 3, 8, 11, 13, 16, 19, 25
40	<p>Section 13.5 The Binomial Theorem</p> <ul style="list-style-type: none"> ✓ Pascal's Triangle ✓ Use the Binomial Theorem 	966: 5, 14, 17, 21, 24, 29, 34, 35, 49
	Test 4	
41	Review	Sections: 1.6, 3.1-3.5, 4.3-4.5, 5.1-5.6, R.6, 6.1-6.8, 12.2-12.6, 13.1-13.5
42	<p>WSU Final Exam</p> <ul style="list-style-type: none"> • January 8 • January 9 	in Class