UNIVERSITY OF NORTHERN COLORADO

Extended Campus

College of Natural & Health Sciences
School of Mathematical Sciences

UNC Dual Enrollment at Greeley Central High School

MATH 124-655/690/691: College Algebra (4 credits; LAC, gtP*))
Fall 2020 & Spring 2021

Instructor: Gary Stark
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Office Phone: 970-348-5113
Office location: Room 225
Office Hours: To Be Determined
Course Dates: August 13 to May 20, 2021

Prerequisite for UNC Dual Enrollment:

- Junior or Senior status
- 3.0 cumulative GPA
- Grade of "C" or better in Algebra 2. A grade of C- is not acceptable.
- Counselor/Instructor approval prior to taking the course
- Parent consent
- Special Exemptions to these qualifications may be made on an individual basis through written request to UNC Extended Campus

Course Description: Topics covered in this course include linear, quadratic, exponential and logarithmic functions; matrices; theory of equations.

Required Materials:

- Text Book: Holliday, B., Cuevas, G., McClure, M., et al. (2007). *Advanced Mathematical Concepts: Precalculus with Applications,* Columbus: Glencoe / McGraw-Hill Companies, Inc.
- Graphing Calculator. Acceptable models include TI-83, TI-83+, TI-84, TI-84+, all other models please ask. (Instructor will be using a TI-84+).
    - Sharing of calculators during quizzes or exams will not be permitted.
    - Bring calculators to class. We will be using them throughout the term.

Methods of Evaluation:
Grading Scale:

A	90.0-100%
B	80.0-89.9%
C	70.0-79.9%
D	60.0-69.9%

F	59.9% and below

Grading Allotment:

5% Attendance and Participation
10% Activities and Homework
10% Projects
10% Quizzes
45% In-class Exams
20% Comprehensive Final Exam

Course Requirements

Attendance and Participation: Students will be in class, seated, and ready to go at the designated start time for the class. Class usually starts with a warmup that will be on the board at the beginning of class. Students should work on the warmup when class starts. Attendance will be recorded during this time. Students will be engaged in the classwork and discussion during class time.

Activities and Homework: All homework for the unit is due before students take the unit exams. In-class activities are due at the end of class or the class period after it is assigned.

Projects: Each semester will include several small written assignments and one larger written assignment. The student will also complete a lab-based project each semester. Due dates will be given for each.

Quizzes: Most units will have one or two graded quizzes to help students prepare for the unit exams.

In-class Exams: Each unit will conclude with a comprehensive exam. The exams may include material from previous units. If you miss an exam due to an excused absence, you must make arrangements to take it immediately upon your return. There will be no opportunities for retaking exams, however the lowest unit exam will be dropped each semester.

Final Exam: A cumulative mid-course exam will be given in December and a cumulative final exam will be given in May.

Portable Electronic Devices:

Please extend courtesy to your instructor and fellow students by turning off your portable electronic devices such as: cell phones, pagers, and iPods. Although not an audio issue, text-messaging is a distraction to other students and prevents you from full participation in class. You should keep your portable electronic devices in your backpack or purse during class. Your personal electronic devices should not be on your desks. If you know that you may need to accept an emergency phone call during class, please let the instructor know. If you need to take a phone call during class, please step out of the classroom while you complete your call. Thank you for your cooperation.

Students with Disabilities

Any student requesting disability accommodation for this class must inform the instructor giving appropriate notice. Students are encouraged to contact Disability Support Services at Greeley Central High School to certify documentation of disability and to ensure appropriate accommodations are implemented in a timely manner.

UNC's Policies

Honor Code

All members of the University of Northern Colorado community are entrusted with the responsibility to uphold and promote five fundamental values: Honesty, Trust, Respect, Fairness, and Responsibility. These core elements foster an atmosphere, inside and outside of the classroom, which serves as a foundation and guides the UNC community's academic, professional, and personal growth. Endorsement of these core elements by students, faculty, staff, administration, and trustees strengthens the integrity and value of our academic climate.

Academic Conduct:
UNC's policies and recommendations for academic misconduct will be followed. For additional information, please see the Dean of Student's website, Student Handbook link
http://www.unco.edu/dos/pdf/StudentCodeofConduct.pdf
Off-campus students taking courses from UNC, should familiarize themselves with the academic regulations and procedures contained in the current UNC catalog: http://catalog.unco.edu/.

Dropping or Withdrawing from a UNC Dual Credit Course:
Note: Drop and withdrawal dates for the courses at your school can be found on your dual enrollment page for your high school.
Please use the Dual Enrollment Drop & Withdrawal Form.

- You can drop your course up until the designated Drop Deadline. The course will be removed from your transcript and you will receive a full tuition refund.
- After the Drop Deadline and up until the Withdrawal Deadline you can withdraw from your course. The course will remain on your transcript with a grade of "W" (this does not impact your GPA), and there is no tuition refund.
- After the withdrawal deadline you are unable to be removed from the course. The course will remain on your transcript with the grade that you have earned, and there is no tuition refund.
- If you stop attending the course but fail to officially withdraw from the course(s), you will be responsible for full tuition and fees and the course grade will remain on your transcript.

***Liberal Arts Core & Colorado gtPathways:**
This course satisfies 4 credits of Area 2. (Mathematics) of the UNC Liberal Arts Core. This course has been approved by the Colorado Commission on Higher Education for inclusion in the Colorado Guaranteed Transfer Program, gtP. gtP courses automatically transfer to any public institution in Colorado and will continue to count toward general education or other graduation requirements for any liberal arts or science associate or bachelor's degree program IF a grade of C- or higher is recorded. Statewide articulation agreements prescribe specific general education and degree requirements in the following professional degree programs: business, early childhood, elementary education, engineering and nursing. Most other courses not approved for the gtP designation will also be accepted in transfer by other institutions but may not fulfill general education or degree requirements. For more information on the gtPathways program, go to
https://highered.colorado.gov/academics/transfers/gtpathways/curriculum.html.

Students who successfully complete the Area 2 Liberal Arts Core requirement in mathematics will have developed an understanding of fundamental mathematical concepts and their applications, will have developed their quantitative problem-solving skills, and will have developed a level of quantitative literacy that provides a foundation for success in their programs of study, careers, and citizenship.
Specifically, they will be able to:

a) Demonstrate good problem-solving habits, including:
    - estimating solutions and recognizing unreasonable results
    - considering a variety of approaches to a given problem, and selecting one that is appropriate
    - interpreting solutions correctly
b) Generate and interpret symbolic, graphical, numerical, and verbal (written or oral) representations of mathematical ideas
c) Communicate mathematical ideas in written and/or oral form using appropriate mathematical language, notation, and style
d) Apply mathematical concepts, procedures, and techniques appropriate to the course
e) Recognize and apply patterns or mathematical structure
f) Utilize and integrate appropriate technology
g) Demonstrate competency in Quantitative Literacy by being able to:
    1) Interpret Information

    a. Explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words).
2) Represent Information
    a. Convert information into and between various mathematical forms (e.g., equations, graphs, diagrams, tables, words).
3) Perform Calculations
    a. Solve problems or equations at the appropriate course level.
    b. Use appropriate mathematical notation.
    c. Solve a variety of different problem types that involve a multi-step solution and address the validity of the results.
4) Apply and Analyze Information
    a. Make use of graphical objects (such as graphs of equations in two or three variables, histograms, scatterplots of bivariate data, geometrical figures, etc.) to supplement a solution to a typical problem at the appropriate level.
    b. Formulate, organize, and articulate solutions to theoretical and application problems at the appropriate course level.
    c. Make judgments based on mathematical analysis appropriate to the course level.
5) Communicate Using Mathematical Forms
    a. Express mathematical analysis symbolically, graphically, and in written language that clarifies/justifies/summarizes reasoning (may also include oral communication).

Students will be assessed on the content and competency criteria through a combination of tests, quizzes and homework assignments.

Course Outline

1) Linear Functions
    a) Relations and functions
    b) Composition of functions
    c) Graphing and modeling with linear functions
    d) Parallel and perpendicular lines
    e) Graphing linear inequalities
2) Systems of Linear Equations and Inequalities
    a) Solving systems of equations in two or three variables
    b) Matrices
    c) Modeling and solving systems of equations using matrices.
3) The Nature of Graphs
    a) Symmetry
    b) Families of graphs
    c) Inverse functions and relations
    d) Critical points and extrema
    e) Graphs of rational functions
4) Polynomial and Rational Functions
    a) Polynomial functions
    b) Quadratic functions
    c) The Remainder, Factor, and Rational Root Theorems
    d) Rational and radical equations and inequalities
5) Exponential and Logarithmic Functions
    a) Family of Exponential Functions
    b) Comparing Exponential and Linear Functions
    c) Applications of Compound Interest
    d) The number e
    e) Logarithms and their Properties
    f) Logarithmic Functions and its Applications

6) Combinatorics and Probability
    a) Permutations and combinations
    b) Permutations with repetitions and circular permutations
    c) Expected value and odds
    d) Conditional probability
    e) Binomial probability
7) Statistics and Data Analysis
    a) Measures of central tendency
    b) Measures of variability
    c) The normal distribution
8) Sequences and Series
    a) Arithmetic sequences and series
    b) Geometric sequences and series
    c) Infinite sequences and series
    d) Special sequences and series
9) Conics
    a) Introduction to analytic geometry
    b) Circles
    c) Ellipses
    d) Hyperbolas
    e) Parabolas
    f) Systems of second-degree equations and inequalities

Changes

The instructor reserves the right to amend, adjust, or otherwise modify the outline and syllabus at any time during the course. Changes will be announced in class and posted online on Schoology. The new syllabus will be available under the 'Syllabus' link, and I will post an announcement on Schoology to make everyone aware of the changes.