



UNIVERSITY OF NORTHERN COLORADO

Extended Campus

College of Natural & Health Sciences
Department of Applied Statistics & Research Methods

UNC Dual Enrollment at Greeley Central High School

STAT150-656: Introduction to Statistical Analysis (3 credits; LAC & gtP*)
Fall 2020 & Spring 2021

Instructor: Mr. Gary Stark

BT Mathematics Education and Physical Science Education, Winona State University
MA, Mathematics, University of Northern Colorado
University of Northern Colorado Adjunct Math Instructor, 2009 - present

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Office Hours: Available during seminar; Wednesday before school, and after school by appointment.

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: Study techniques used in organizing data, including frequency distributions, histograms, measures of central tendency, measures of dispersion, probability distributions, point estimation, interval estimation and testing hypotheses. Course is worth 3 credits. (LAC, gtP).

Required Materials: Textbook: *The Practice of Statistics 5th edition For the AP Exam* Daren S. Starnes, Josh Tabor, David S. Moore, and Daniel S. Yates, 2015, W. H. Freeman (Publisher)

- 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 semester.

Course Grading:

A	90 – 100%	Weighted 5.0 (on 4.0 scale) at GCHS not UNC
B	80 – 89.99%	Weighted 4.0
C	70 – 79.99%	Weighted 3.0
D	60 – 69.99%	<i>NO UNC CREDIT AWARDED...This will affect your college transcript!</i>
F	below 60%	<i>NO UNC CREDIT AWARDED...This will affect your college transcript!</i>

Grading Allotment:

10% Activities and Homework

10% Quizzes and Projects

60% In-class Exams

20% Comprehensive Final Exam

Methods of Evaluation:

Activities and Homework: Homework is assigned daily with an expectation that it is turned in and complete within a few days (2 or 3 at the most, except for assignments extended in class). If you have any expectation of passing the AP exam you must commit now to completing all homework and completing it on time. This class moves quickly, and concepts build daily – completing homework completes the daily learning cycle (see brain research). Oftentimes you need some clarification or assistance to complete homework – please contact me via email and/or come in for intervention for assistance. You can be very successful in this class – the homework is a critical component of this success.

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.

Attendance: Attendance is critical to success in a university course. Universities do not acknowledge the difference between excused and unexcused absences. As such, your attendance missing a class will only hurt you over time. Please do your best to be here every day!

Planned Excused Absences:

If you will miss class because of a planned event, i.e. school activity, family event, doctor's appointment, you must get the assignment for the period that you expect to miss, prior to the absence.

This work is due on the same due date given to the rest of the class.

Unplanned Excused Absences:

If you miss class because of an unexpected event, i.e. illness, family emergency, you may contact me by phone or email for your assignment. At the very least, ***you must meet with me immediately upon your return*** to obtain the work missed.

Unexcused Absences:

If your absence from school is unexcused, ***you are not entitled to earn credit for work missed;*** this includes credit for tests, quizzes, and assignments.

Study Groups – Form these now. Get phone numbers, meet and do homework and study. Trust me - a solid study group is also critical for your success!

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 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.

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. Any questions regarding change in syllabus should be directed to me.

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 DUAL CREDIT 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/>.

***Liberal Arts Core & Colorado gtPathways**

This course satisfies 3 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://highereducation.colorado.gov/academics/transfers/gtpathways/curriculum.html>.

College Credit / UNC Transcript

Students may enroll for 3 credit hours of transferable college level credit through UNC, at an *approximate* cost of \$195 (subject to university tuition rates).

- Upon receipt of registration, UNC will send billing statements to students' homes and payment must be made to directly to the university.
- A grade of C or better is required to earn college credit.
- Students must request official transcript from UNC (approximate cost \$15).
- Students are responsible for following UNC guidelines for drops and withdrawals. There are deadline dates!

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.

How to be successful in this class:

1 – Start today. Plan times to meet with others to study and/or work on assignments.

2 – Read the textbook. Every single student who has received an AP score of 5 in this class have agreed this is the single most effective way to learn the difficult content.

3 – Suit up and show up. Texting throughout the lesson isn’t very intelligent. The selfie can wait.

LAC Area 2/ GtPathways Content and Competency Criteria

“The Colorado Commission on Higher Education has approved STAT 150 for inclusion in the Guaranteed Transfer (GT) Pathways program in the Area 2 category. For transferring students, successful completion with a minimum C– grade guarantees transfer and application of credit in this GT Pathways category. For more information on the GT Pathways program, go to <http://higher.ed.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:

- 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;
- Generate and interpret symbolic, graphical, numerical, and verbal (written or oral) representations of mathematical ideas;
- Communicate mathematical ideas in written and/or oral form using appropriate mathematical language, notation, and style;
- Apply mathematical concepts, procedures, and techniques appropriate to the course
- Recognize and apply patterns or mathematical structure;
- Utilize and integrate appropriate technology;
- Demonstrate competency in Quantitative Literacy by being able to:
 - Interpret Information
 - Explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words).
 - Represent Information
 - Convert information into and between various mathematical forms (e.g., equations, graphs, diagrams, tables, words).
 - Perform Calculations
 - Solve problems or equations at the appropriate course level.
 - Use appropriate mathematical notation.
 - Solve a variety of different problem types that involve a multi-step solution and address the validity of the results.
 - Apply and Analyze Information
 - 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.
 - Formulate, organize, and articulate solutions to theoretical and application problems at the appropriate course level.
 - 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).
- 6) Address Assumptions
 - a. Describe and support assumptions in estimation, modeling, and data analysis, used as appropriate for the course.

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

Course Outline

1. Nature of Probability and Statistics
 - (a) Descriptive and Inferential Statistics
 - (b) Variables and Types of Data
 - (c) Data Collection and Sampling Techniques
 - (d) Experimental Design
 - (e) Using Technology
2. Frequency Distributions and Graphs
 - (a) Organizing Data
 - (b) Graphing Data
3. Data Description
 - (a) Measures of Central Tendency
 - (b) Measures of Variation
 - (c) Measures of Position
 - (d) Exploratory Data Analysis
4. Probability
 - (a) Sample Spaces and Probability
 - (b) Addition Rules for Probability
 - (c) Conditional Probability
5. Discrete Probability Distributions
 - (a) Probability Distributions
 - (b) Binomial Distribution
6. Normal Distribution
 - (a) Standard Normal Distribution
 - (b) Applications of the Normal Distribution
 - (c) The Central Limit Theorem
7. Confidence Intervals
 - (a) For the Mean when σ is known
 - (b) For the Mean when σ is unknown
 - (c) For Proportions
 - (d) For Variances and Standard Deviation
8. Hypothesis Testing
 - (a) Z-test for Means
 - (b) T-test for Means
 - (c) Z-test for Proportions
 - (d) Chi-square Test for Variance or Standard Deviations
9. Hypothesis Testing for Comparing Two Samples
 - (a) Z-test for between Means
 - (b) Independent Samples T-test
 - (c) Dependent Samples T-test
 - (d) Z-test between Proportions
 - (e) F-test between Variances
10. Correlation and Regression
 - (a) Scatter plots and Correlation
 - (b) Regression Analysis
 - (c) Coefficient of Determination and Standard Error of Estimate
11. Chi-Square Tests

- (a) Test for Goodness of Fit
- (b) Test for Independence
- (c) Test for Homogeneity of Proportions

Parent/guardians: You can view your student's grades AND sign up for automated email notification of your student's grade status by logging on to <http://central.greeleyschools.org/home.aspx>. I highly suggest you visit this site regularly.