UNC

UNIVERSITY OF NORTHERN COLORADO

Extended Campus

College of Natural & Health Sciences
School of Mathematical Sciences

UNC Dual Enrollment at Bennett High School

STAT150-689: Introduction to Statistical Analysis (3 credits; LAC, gtP*)
Fall 2020

Instructor: Linda Dodge
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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.

Required Materials:
- Textbook: Statistical Reasoning for Everyday Life. Bennett, Jeffrey, Briggs, William & Triola, Mario. Pearson; 5th Edition (January 14, 2017). ISBN-13: 978-0134494043
- 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.

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:
45% Three in-class exams
20% Comprehensive Final Exam
15% Quizzes
10% Homework
10% Labs/Projects

Missed Exam Policy: In the event of a schedule conflict, a test may be taken beforehand with advance notice. Students who fail to attend class on the day of an in-class exam must notify the instructor within 24 hours, with an *excused* absence, to arrange a make-up test or quiz. Your make-up exam/quiz will be taken during the arranged time and place prior to the next scheduled class. If you fail to notify the instructor, you will not be able to make up the missed test/quiz and will receive a grade of zero.

No retakes on any exam. Make ups are for extreme circumstances only. You may have your lowest test score replaced by the final exam score if you complete the final exam review. Final is cumulative.

You will have an exam or a quiz every week! Your lowest quiz will be dropped at the end of the semester☺

Homework
You are expected to keep a math notebook. Take notes, and complete assigned problems in this notebook. Homework problems will be assigned from the book for each section covered and are expected to be completed prior to the next class. On test days, notebooks will be checked. All problems need to be written out, except word problems, and all work needs to be shown on any problems that require steps to arrive at a solution. Please highlight or label each section and keep your notebook organized. Experience has shown that the students who take time to do extra work and put the time into homework are the ones who tend to be the most successful. I will look at your work carefully and reward points based on your work shown. Notebooks, along with class activities, are 10% of the course grade. A neat, organized and completed notebook can earn extra credit points.

Late Work
Homework is assigned daily in math classes. It is extremely important to keep current on your assignments, as practice is a major part of learning math concepts. Homework must be completed on a daily basis *(KEEP UP!)*. Only notebooks that are *completed* but forgotten on test days will be accepted on the next class day for full credit.

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. 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.

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
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.

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 Bennett High School to certify documentation of disability and to ensure appropriate accommodations are implemented in a timely manner.

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 blackboard. The new syllabus will be available under the 'Syllabus' link, and I will post an announcement on blackboard to make everyone aware of the changes.

*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://highered.colorado.gov/academics/transfers/gtpathways/curriculum.html.

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LAC Area 2/ GtPathways Content and Competency Criteria

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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.

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)
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