CENTRAL CONNECTICUT STATE UNIVERSITY
Department of Mathematical Sciences
STAT 104-Sec 02&Sec 02*: Elementary Statistics
CRN: 43681&CRN40699, Credit Hours: 3.00
Spring 2021

Time: Tuesday&Thursday 09:25am- 10:40am, Classroom: Sec 02- Maria Sanford 321
Sec 02* -Online Synch*.

*Lectures will be synchronously broadcasted on Media Gallery in Blackboard.

Instructor: ARBEN D. ZEQIRAJ
Tel: (860)-995-2039 (txt/call)
Email:zeqira@ccsu.edu
Office:Webex or Blackboard Ultra
Webex link: https://ctedu.webex.com/meet/AZeqiraja@ccsu.edu
Office Hours: T&TH: 02:00pm -3:30pm other times other time by appointment only

Course Description: Intuitive treatment of some fundamental concepts involved in
collecting, presenting, and analyzing data. Topics include frequency distributions,
graphical presentations, measures of relative position, measures of variability,
probability, probability distributions (binomial and normal), sampling theory, regression,
and correlation. No credit given to students with credit for STAT 108, 200, 215, 314 or
315.CSUS Common Course

Required Text: Discovering Statistics-For CCSU, by Daniel Larose, 3rd edition, by
29574-5

Prerequisite: MATH 101 (C- or higher) or MATH 102 (C- or higher) or MATH 103
(C- or higher) or placement exam.

Calculator Use: The recommended calculator for this course is the TI-83+. Similar
calculators such as the TI-83, TI-84, TI-84+ are also acceptable and may be used for
examinations. You are expected to have your calculator (including working batteries)
with you at every class meeting.

Instructions on Taking a Hyflex Course:
Students who registered for on-ground seats
STAT 104, CRN 43681, Sec.02 will attend in-person classes in the classroom listed in
your schedule – MS 321

Students who registered for online class
STAT 104, CRN 40699, Sec.02* will watch the lecture being broadcast live through
Blackboard. To view the broadcast, click to Media Gallery in the Blackboard Menu.
To register your attendance and communicate with me via chat throughout the lecture, click
Blackboard Collaborate Ultra in the Menu and enter the Course Room – this is a chat room
and will take your attendance automatically. Unfortunately, audio communication is not
possible due to a 30 seconds delay.
**Course Requirements:** Attend and participate in class regularly; complete homework assignments; take quizzes and tests, as scheduled. A general rule for any college course is that you are expected to put in at least 2 hours of work outside of class for every hour in class. **For STAT 104, the expectation is at least 6 hours per week outside of class.**

**Topics Covered:**

**Chapter 1  The Nature of Statistics**

1.2 An Introduction to Statistics  
   - What is Statistics?  
   - Elements, Variables, and Observations  
   - Qualitative and Quantitative Variables  
   - Discrete and Continuous Variables  
   - Levels of Measurement  
   - Statistical Inference

1.3 Gathering Data  
   - Random Sampling  
   - More Sampling Methods  
   - Selection Bias  
   - Experimental Studies and Observational Studies

**Chapter 2  Describing Data Using Graphs and Tables**

2.1 Graphs and Tables for Categorical Data  
   - Frequency Distributions and Relative Frequency Distributions  
   - Bar Graphs and Pareto Charts  
   - Pie Charts

2.2 Graphs and Tables for Quantitative Data  
   - Frequency Distributions and Relative Frequency Distributions for Discrete and Continuous Data  
   - Histograms and Frequency Polygons  
   - Stem-and Leaf Displays and Dotplots  
   - Distribution Shape, Symmetry, and Skewness

2.3 Further Graphs and Tables for Quantitative Data  
   - Cumulative Frequency Distributions and Cumulative Relative Frequency Distributions Ogives

**Chapter 3  Describing Data Numerically**

3.1 Measures of Center  
   - The Mean  
   - The Median  
   - The Mode  
   - Skewness and Measures of Center

3.2 Measures of Variability  
   - The Range  
   - Population Variance and Population Standard Deviation  
   - Compute the Sample Variance and Sample Standard Deviation  
   - The Empirical Rule  
   - Chebyshev’s Rule
3.4 Measures of Relative Position and Outliers

- z-Scores
- Detecting Outliers Using the z-Score Method
- Percentiles and Percentile Ranks
- Quartiles and the Interquartile Range

3.5 Five-Number Summary and Boxplots

- The Five-Number Summary
- The Boxplot
- Detecting Outliers Using the IQR Method

**Chapter 4 Correlation and Regression**

4.1 Scatterplots and Correlation

- Scatterplots
- Correlation Coefficient \( r \)

**Chapter 5 Probability**

5.1 Introducing Probability

- Building Blocks of Probability
- Classical Method of Assigning Probability
- Relative Frequency Method

5.2 Combining Events

- Complement, Union, and Intersection
- Addition Rule

5.3 Conditional Probability

- Introduction to Conditional Probability
- Independent Events
- Multiplication Rule

5.4 Counting Methods

- Multiplication Rule for Counting
- Permutations and Combinations

**Chapter 6 Probability Distributions**

6.1 Discrete Random Variables

- Random variables
- Discrete Probability Distributions
- Mean and Variability of a Discrete Random Variable

6.2 Binomial Probability Distribution

- Binomial Experiment
- Computing Binomial Probabilities
- Binomial Mean, Variance, and Standard Deviation

**6.3 - Poisson Probability Distribution –**

6.4 Continuous Random Variables and the Normal Probability Distribution

- Continuous Probability Distributions
- Calculating Probabilities for the Uniform Probability Distribution
- Introduction to Normal Probability Distribution
- Finding Areas Under the Standard Normal Curve for a Given Z-Value
- Finding Standard Normal Z-Values for a Given Area

**Chapter 7 Sampling Distributions**

7.1 Central Limit Theorem for Means
Sampling Distribution of $\bar{X}$ for a Normal Population
Central Limit Theorem for Means
Finding Probabilities Using a Sampling Distribution

**7.2 – Central Limit Theorem for Proportions

**Chapter 8 **Confidence Intervals

8.1 Z Interval for the Population Mean
   - Calculate a Point Estimate of the Population Mean
   - The Z Interval for the Population Mean
   - Ways to Reduce the Margin of Error
   - Sample Size for Estimating the Population Mean

8.2 t Interval for the Population Mean
   - Introducing the t Distribution
   - Interval for the Population Mean

8.3 Z Interval for the Population Proportion
   - Point Estimate of the Population Proportion $p$
   - The Z Interval for the Population Proportion $p$
   - Margin of Error for the Z interval for $p$
   - Sample Size for Estimating the Population Proportion $p$

**Chapter 9 **Hypothesis Testing

9.1 Introduction to Hypothesis Testing
   - Constructing the Hypotheses
   - Type I and Type II Errors

9.2 Z Test for the Population Mean: Critical-Value Method
   - The Essential Idea About Hypothesis Testing for the Mean
   - Test Statistic $Z_{data}$
   - Critical Regions and Critical Values
   - Performing the Z Test for the Mean Using the Critical-Value Method

9.3 Z Test for the Population Mean: $p$-Value Method
   - The $p$-Value Method of Performing the Z Test for the Mean
   - Assessing the Strength of Evidence against the Null Hypothesis
   - The Relationship Between the $p$-Value Method and the Critical-Value Method

9.4 t Test for the Population Mean
   - t Test for $\mu$ Using the Critical-Value Method
   - t Test for $\mu$ Using the $p$-Value Method

9.5 Z Test for the Population Proportion
   - Z Test for $p$ Using the Critical-Value Method
   - Z Test for $p$: The $p$-Value Method

NOTE: The topics are covered in Chapters 1-9 in the textbook.
** above means these sections should be covered as time permits.

**Resources Available:**
1. If you need help, take advantage of your instructor's office hours. Do not wait until just before the first test to do so.
2. Free tutoring is available in the The Learning Center--located in Diloretto Hall (D-316). A schedule for hours the Center is open will be posted soon after the beginning of the semester.
3. Form a study group with other students in your section. Explaining solutions to homework problems to each other is a good way to learn.
4. A list of private tutors for hire is available in the math department office, Room 107 Marcus White, 832-2835.

**Evaluation:**
The average for the course will be based on the following weights:

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Three Tests (16% each)</td>
<td>48%</td>
</tr>
<tr>
<td>Project</td>
<td>8%</td>
</tr>
<tr>
<td>Four Quizzes (4% each) *</td>
<td>12%</td>
</tr>
<tr>
<td>Assignments/Homework</td>
<td>10%</td>
</tr>
<tr>
<td>Final Examination</td>
<td>22%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100%</td>
</tr>
</tbody>
</table>

**Tests**
One Test can be retaken and there is no “extra credit”. No exam grade is “dropped”. You must be prepared and make your best effort on each exam.

**Quizzes**
* The lowest quiz score will be dropped when computing the final grade.

Minimum averages have been established for each of these grades:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Minimum Average</th>
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<tbody>
<tr>
<td>A</td>
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</tr>
<tr>
<td>A-</td>
<td>90%</td>
</tr>
<tr>
<td>B+</td>
<td>87%</td>
</tr>
<tr>
<td>B</td>
<td>83%</td>
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<tr>
<td>B-</td>
<td>80%</td>
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<td>C-</td>
<td>70%</td>
</tr>
<tr>
<td>D+</td>
<td>67%</td>
</tr>
<tr>
<td>D</td>
<td>63%</td>
</tr>
<tr>
<td>D-</td>
<td>60%</td>
</tr>
</tbody>
</table>

**Students with Disability:**
Central Connecticut State University (CCSU) complies with the letter and spirit of the Federal laws, the Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act. CCSU Student Disability Services (SDS) staff approves and coordinates reasonable accommodations that provide equal access and educational equity to undergraduates and graduate students who have a documented disability. Through an individual interactive process, SDS arranges reasonable accommodations, auxiliary aids, and modifications to the learning environment and/or campus based on received documentation and functional limitations of the student.

While it is advisable that students arrange for accommodations prior to the start of the semester, a request and approval for accommodations can be made at any time during the semester. SDS notifies faculty of approved accommodations through an emailed accommodation letter, and students are copied and advised to discuss class accommodation arrangements with their instructors. SDS provides some auxiliary aids and a proctored testing center for accommodated exams. In some cases, SDS staff may contact and consult with faculty to discuss essential requirements of a course or program...
of study. SDS encourages faculty to also call when questions arise about accommodation arrangements. Please contact SDS office if you have any questions or concerns.

Student Disability Services
Willard Hall, Room 201, Stanley Street, New Britain, CT 06050
T: 860-832-1952    F: 860-832-1865: Disabilityservices@ccsu.edu

Academic Integrity:
All students are expected to demonstrate integrity in the completion of their coursework. Academic integrity means doing one’s own work and giving proper credit to the work and ideas of others. It is the responsibility of each student to become familiar with what constitutes academic dishonesty and plagiarism and to avoid all forms of cheating and plagiarism. Students who engage in plagiarism and other forms of academic misconduct will face academic and possibly disciplinary consequences. Academic sanctions can range from a reduced grade for the assignment to a failing grade for the course. From a disciplinary standpoint, an Academic Misconduct Report may be filed and a Faculty Hearing Board may impose sanctions such as probation, suspension or expulsion. For further information on academic misconduct and its consequences, please consult the Student Code of Conduct (http://www.ccsu.edu/StudentConduct/codeofconduct.asp) and the Academic Misconduct Policy (http://www.ccsu.edu/AcademicIntegrity/).

Student Behavior - Taken from the BOR/CSCU STUDENT CODE OF CONDUCT https://web.ccsu.edu/studentconduct/files/Student%20Code%20of%20Conduct%201.15.15.pdf
All members of CSCU must at all times govern their social and academic interactions with tolerance and mutual respect...Because of the BOR’s and CSCU’s commitment to principles of pluralism, mutual respect, and civility, certain activities are not acceptable on CSCU campuses.
Please be aware that any violations of this Code of Conduct will result in a report of misbehavior to the Office of Student Conduct. Severe violations can result in dismissal from CCSU.

Withdrawal Policy:
The last day to withdraw from a course without instructor approval is Monday, April 19th. It is strongly recommended that students consult with their academic advisors prior to deciding to withdraw. Cessation of attendance, notice to the instructor, or telephone calls to the Registrar’s Office are not considered official notice of a student’s intention to drop the course. After April 19th withdrawals are allowed only under extenuating circumstances and require written permission of instructor and chairperson.
Poor academic performance is not considered an extenuating circumstance.

Statement on Discrimination and Harassment:
Central Connecticut State University strives to maintain our campus as a place of work and study for faculty, staff, and students that is free of all forms of prohibited
discrimination and harassment based upon age; ancestry, color; gender identity and expression; intellectual disability; learning disability; mental disorder; physical disability; marital status, national origin; race; religious creed; sex, (including pregnancy, transgender status, sexual harassment and sexual assault); sexual orientation; or any other status protected by federal or state laws. Any student who has concerns about should contact the Office of Equity & Inclusion (OEI) at 860-832-1652, Student Affairs at 860-832-1601, or their faculty member. The OEI is located on the main floor of Davidson Hall, room 119.

Sexual Misconduct, Intimate Partner Violence and Stalking:
Central Connecticut State University (CCSU) will not tolerate sexual misconduct against students, staff, faculty, or visitors in any form, including but not limited to: sexual assault, sexual exploitation, sexual harassment or stalking, as defined in CCSU policies. For additional information, please consult the CCSU policy at https://www.ccsu.edu/diversity/policies/index.html. All faculty members and staff have a duty to report incidents of sexual harassment including sexual misconduct, intimate partner violence and stalking to Pamela Whitley, Title IX Officer, Office of Equity & Inclusion, Davidson Hall, 119. To file a report, contact: Equity & Inclusion (860-832-1652), Student Conduct (860-832-1667) or Student Affairs (860-832-1601). For criminal complaints, contact the University Police (860-832-2375). For support and advocacy, contact: Office of Victim Advocacy at 860-832-3795 or jflanagan@ccsu.edu; Student Wellness Services at 860-832-1945 (confidential); Women’s Center at 860-832-1655; the local YWCA’s Sexual Assault Crisis Services Hotline at 860-223-1787 (confidential) and Prudence Crandall Center for Domestic Violence (confidential) at 888-774-2900 (24-hour hotline).

Inclement Weather Policy:
In the event of a weather emergency which requires curtailment or cancellation of classes, listen to WTIC (1080 AM) or call (860) 832-3333 for the “general snow message.”

Academic Calendar:
A full calendar for the Spring 2021 semester may be found at the following website:
http://www.ccsu.edu/calendar/

Attendance:
It is essential that you attend class regularly, and on-time. Attendance will be taken, 4 or more Unexcused Absences will result in an F grade in the course.

Make-up exams:
Only extraordinary circumstances would permit the make-up of a missed exam or quiz. (e.g., certified illness, death in the family, religious observances).

Final Examination: Tuesday, May 11th ………………..08:00am-10:00am

Cell Phones and other communication devices: Must be turned off at all times during class.

NOTE: DEPARTURES FROM THE OUTLINE MAY BE MADE AT THE DISCRETION OF THE INSTRUCTOR