SOUTHWESTERN
AN OREGON COMMUNITY COLLEGE

Course Title and Number: MTH 243 Probability & Statistics (Hybrid)		**Instructor:** Benjamin Holt
Year and Term: Fall 2023	**Course Credits:** 4	**Office Location:** Sitkum 2C
Office Phone: 541-888-7608	**Office Hours:** MW: 9 am – 9:50 am, TR: 10 am –11:30 am	**Class Location:** Sitkum 13
Meeting Time/Days: MW 1:00 pm – 1:50 pm		**Email Address:** benjamin.holt@socc.edu (PLEASE use your socc.edu account!)
Web Page Address: https://holt.blue/MTH_243/homepage.html		Fax Number:

Course Description *(as it appears in the approved College Course Outline)*	Introduces elementary statistics techniques to aid decision-making in the business environment. Emphasis is on statistical inference, probability, sampling estimation, and hypothesis testing.
Course Objectives Reflecting Expected Student Learning Outcomes	Upon completion of the course the learner will: • 1. Explain how descriptive and inferential statistics can be used to analyze data. • 2. Explain the strengths and weaknesses of predictions made for a population based on sampled data. • 3. Explain how the techniques of hypothesis testing is used to support or reject a claim about a population based on sample data. • 4. Display and interpret data in tables and graphs. • 5. Evaluate and interpret formulas for the basic statistical quantities: mean, median, mode, standard deviation, standard score, confidence intervals and hypothesis test values. • 6. Read and utilize statistical tables to make predictions about normally or approximately normally distributed data. • 7. Explain biased versus random samples. • 8. Describe the analytical and interpretive power of statistical calculations as well as their limitations.
Grading	**Course Requirements** **What to Expect Each Class Time** Pre-Class Time Video Lectures: Before every class time there will be two video lectures for you to watch before each class session. I strongly advise taking handwritten notes (which you may use on exams) during these videos and writing down questions you might have about the material. Please see the course schedule on the last page of this syllabus. Topics listed those your are expected to watch before class that day. Extra Credit Group Quizzes (ECGQ): To reward your diligence for 1) showing up to class and 2) watching the course videos ahead of time and taking notes, there will be a group quiz with extra credit awarded for correct answers to

homework-style questions.
At the beginning of each class time you will be randomly assigned to groups and will work together to answer two homework-style questions, one from each section covered that day. One homework point will be awarded for each correct response to these two questions.

Two correct responses out of two means everyone on your group will receive 17 points out of 15 for a pass code uploaded on time. (see "Online Homework and Practice" below).

One correct response out of two means everyone on your group will receive 16 points out of 15 for a pass code uploaded on time.

Zero correct responses out of two means everyone on your group will receive 15 points out of 15 for a pass code uploaded on time.

In-Class Group Activities: Each class time, in your groups assigned for that day, we will either

1) do an activity related to the sections covered in the video lecture, OR
2) help one another on the homework due for that day

Online Homework and Practice: For every section in the textbook listed in the syllabus course schedule (last page of this syllabus), there is a homework assignment. Every homework assignment will consist of 10 multiple-choice questions drawn randomly from a test bank of problems. To pass an assignment, you must get a grade of at least 70%. You may attempt the assignment as many times as you like. Each homework assignment is completed online where you will earn a pass code. Go to

https://holt.blue/MTH_243/homework.html

and follow the instructions for completing and submitting homework. When you earn a pass code, you will upload it into Canvas.

Each pass code submitted on time will receive the full 15 points regardless of the score. This is to honor the time you put into the homework. Your homework grade is your pass code average.

Homework constitutes 15% of the course grade.

Due dates for pass codes are given in course schedule on the last page of this syllabus.

Please note that…

Online homework pass codes uploaded late will receive half credit and any extra credit earned in class will be forfeited.

After verifying the pass code, I will then update Canvas.

Please note that:

- 1) Images or screenshots of pass codes are NOT accepted.
- 2) You are advised to keep a file containing all your pass codes in case of any possible mishaps. For example, if a student uploads a pass code for the wrong assignment.

Individual Data Collection and Analysis Project: You will be responsible for a project in which you will estimate an unknown mean (average) regarding some aspect of your life. You will:
1. collect quantitative data about some aspect of your life
2. estimate the average of this quantity using a 95% confidence interval
3. Compare your average to a claimed average using a one-sample t-test.

Here are some examples of what you might be interested in:
1. the time it takes to walk to campus
2. the time you wait in line at the grocery store
3. the average miles per gallon your vehicle gets between fill ups
4. how many hours of television you watch per day
5. the number of texts you send in a day
6. your heart rate, blood pressure, or other vital metric

These are only a few examples. You're welcome to be as creative as you like, so long as the data can be reasonably and safely collected. If you have any questions, you may always consult with me.

Part I: The Proposal. When you decide what data you want to collect, you will write a proposal and upload a PDF file in Canvas. In your proposal you will answer the following questions:

1. What average are you interested in estimating?
2. Why are you interested in this average?
3. What data do you intend to collect to estimate this average?
4. How do you intend to collect this data?
5. Are there any risks involved with collecting this data?
6. What reference average will you compare your personal average to?
7. What is the source of the reference average you chose?

The project is in two parts: a rough draft and final draft.
You will upload this document to Canvas as PDF file. Please see the course

schedule for due dates in Canvas.

Part II: Week 6 Update. In Week 6, you will submit an update on your progress and will include:

1. a brief reminder about the average what you are estimating
2. the raw data you have collected so far
3. a histogram of the data
4. a box plot of the data
5. summary statistics of the data (mean, standard deviation, five number summary)
6. a description of the distribution or patterns in the data you have so far using the terminology and concepts from the course

You will upload this document to Canvas as PDF file. Please see the course schedule for due dates in Canvas.

Part III: Project Rough Draft. Your project rough draft will be your best attempt at a finished project (see Part IV below).

You will upload this document to Canvas as PDF file. Please see the course schedule for due dates in Canvas.

Part IV: Project Final Draft. In your report you will include the following sections with headings:

1. A title page for your project which includes
   A) project title
   B) your full name, course, and date of submission

2. an introduction which clearly explains what data you collected and why you collected it

3. a description of how you collected your data

4. your analysis:
   A) histogram and box plot of data
   B) a description of your data using course vocab and concepts
   C) a 95% confidence interval for the true mean
   D) a one-sample t-test with p-value and comparison to claimed mean

5. your conclusions based upon your confidence interval and one-sample t-test:
   A) a verbal interpretation of your confidence interval
   B) restate p-value and state conclusion in terms of the null hypothesis (keep or reject null hypothesis)
   C) State the above conclusion in plain language that anyone can

understand.

You will upload this document to Canvas as PDF file. Please see the course schedule for due dates in Canvas.

All project items are worth 15% of your course grade.

https://holt.blue/MTH_243/project.html

You may find examples some past group projects on our course website:

https://holt.blue/MTH_243/Resources/project_ideas.html

Exams: There will be two exams, a midterm and a final, over the course of the term covering material up to each exam. Every exam will consist of 20 multiple-choice questions drawn randomly from our test question bank which consists of problems similar to those in the online homework.

Every exam you take in this class will generated from

https://holt.blue/MTH_243/mcqs.html

and there you may generate as many practice exams as you like. As you will see from using the above resource, none of the exams will be cumulative.

The midterm and final exams are each worth 35% of the course grade.

Calculators & Technology: For the exam you may use the TI 30XIIS, TI Multiview, or TI-83/83 calculator. If there is another calculator that you would like to use, you need to get permission with me beforehand. You MAY NOT use any online resources during the exam.

Handwritten Notes: For the exam you may use your handwritten notes. You MAY NOT use any online resources during the exam.

Optional Exam Review Assignments & Curve Insurance: For both exams there are two Optional Exam Review Assignments. (Please see Canvas for due dates.) Students who successfully pass a exam review assignment before its respective exam will automatically receive the higher of their raw score and a curved score based upon the class average. Students who choose not to complete this assignment will simply receive their raw, uncurved score.

To complete this optional assignment go to

https://holt.blue/MTH_243/mcqs.html

Please follow the instructions and choose the appropriate exam using the drop-down menu.

If you successfully complete a practice/review exam with a 70% or better (you have as many attempts as you like), you will receive a pass code for the assignment. You will then copy, paste, and upload this pass code into Canvas. This must be done before the due date given in Canvas. Late exam practice/review pass codes will not be accepted.

Students who need reasonable accommodation should contact the instructor or call Disability Services for Students at 541-888-7405.

Policies on Missed Exams and Late Work:

Late homework pass codes can be made up at any time before the final exam at for half credit. Any extra credit earned in classwill be forfeited.

Except for the final draft of the data and analysis project, project items turned in late also receive half credit. However, late final drafts will receive no credit.

Missed exams can be made up at a penalty of 20% subtracted from the score received. If you miss an exam for reasons which are beyond your control (travel arrangements do not count), you are welcome to present your circumstances to me. Right before class is generally not a good time to do this, so please be mindful. My office hours are usually the best place to discuss such matters.

Also, please be aware that travel arrangements made in advance of exam dates are NOT considered circumstances beyond your control.

Course Grade: Your course grade is determined by the following items and their associated weights:

Online Homework: **15%**
Individual Data Collection & Analysis Project: **15%**
Midterm Exam: **35%**
Final Exam: **35%**

The letter grade equivalents to the above course grade are:
90≤Course Grade<100 **A**
80≤Course Grade<90 **B**
70≤Course Grade<80 **C**
60≤Course Grade<70 **D**
Course Grade<60 **F**

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	Please Note: • 1. No graded items will be accepted past the deadline 11:59 pm on the day of the final exam. • 2. Your final course grade will NOT be rounded up no matter how close it is to the next letter grade. Ample opportunity is provided during the term to earn the grade you want and it is your job to make sure your grade lands where you want it.
Text(s)	**Optional Text(s):** Open Stax Introductory Statistics, Barbara Illowsky and Susan Dean. The electronic version (ISBN 978-1-947172-05-0) is freely available on the course website, and printed copies (ISBN 978-1-938168-20-8) are available in the campus bookstore for purchase.
Required Materials	A TI 30XIIS, TI Multiview, or TI-83/84 Calculator
Term Calendar *(The instructor reserves the right to alter dates of presentations and exams/projects.)*	Please see the course calendar on the last page of this syllabus.
Prerequisites	MTH 95 or MTH 105 is a prerequisite for this course. If you did not pass MTH 95 or MTH 105 with a "C" or higher, you may be administratively withdrawn from this course within the refund period. This withdrawal could affect your financial aid and/or academic standing. If you are uncertain about whether you have passed MTH 95 or MTH 105 with a "C" or higher, check MyLakerLink or with your advisor within the first week of class to ensure you have met the course prerequisites.
Availability of Tutoring, Learning Lab, Academic Support	In addition to office hours I highly recommend that you visit the tutoring center on the 3rd floor of the Tioga building. There are tutors there waiting to help you! Also, tutoring services are FREEEEEEEEEEEEEEEEEEE!!!!!

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Policies and Guidelines

Components marked with asterisk (*) are required for every syllabus.

*** Course Hours**

Southwestern's Credit Hour Administrative Policy (APP 8191) stipulates that credit-bearing courses, regardless of delivery method, are scheduled and conducted in compliance with the definition of the credit hour as set forth in Section 600.2 and 600.24 of the Code of Federal Regulations and the NWCCU Policy on Credit Hour.
For this reason, students are expected to complete a minimum of two hours of out-of-class student work per credit hour each week for the quarter.

*** Children in the Classroom**

Children represent a disruptive element for the classroom. They also increase the risk of accidents occurring in the laboratory. For those reasons, children should not be brought to either the classroom or the laboratory.

***Academic Honesty: Plagiarism And Cheating**

Cheating, plagiarism, and other acts of academic dishonesty are regarded as serious offenses. Instructors have the responsibility to submit, in a written report to the Dean of Students any such incident that cannot be resolved between the instructor and student. The policy of the Board of Education of Southwestern Oregon Community College on Student Rights, Student Code of Conduct, and Student Grievance Procedure outlines penalties ranging from admonition to expulsion from the class or college. In the policy, academic plagiarism is defined as: "The intentional submission for evaluation to a college instructor or administrator of material based, in significant part, on work done by someone other than the submitter without reasonable written indication to the evaluator of the material's true source." Academic cheating is defined as "The intentional submission for evaluation to a college instructor or administrator of material based, in part, on a source or sources forbidden by generally accepted standards or by regulation established by the evaluator and disclosed in a reasonable manner." The complete policy, student rights and responsibilities, penalties, and recourse through the Grievance Procedure can be found in the Student Handbook (http://www.socc.edu/studentlife/pgs/bm~doc/socc-hb.pdf).

***Academic Ethics and Confidentiality**

It is the responsibility of everyone engaged in the learning experience to respect the rights and feelings of their fellow learners. Information gathered in the classroom and from on-line discussions and exercises is to be considered confidential. At the same time, students must recognize that the instructor and the College cannot guarantee the confidentiality of what the student may choose to disclose. Students must use their own discretion when engaging in classroom discussion.

***Classroom Behavior**

Instructors have the responsibility to set and maintain standards of classroom behavior appropriate to the discipline and method of teaching. Students may not engage in any activity which the instructor deems disruptive or counterproductive to the goals of the class. Students are required to keep cell phones, beepers, and pagers off during class lectures, unless there is permission in advance from the instructor. Instructors have the right to remove offending students from class. Repetition of the offense may result in expulsion from the course.

***Student Conduct**

Opt #1: Students must read and be familiar with the Code of Conduct as published in the Student Handbook, policies and procedures as outlined in campus publications, Southwestern Oregon policies.

Opt. #2: Students in this (or any) program of study should be especially aware of the severe consequences of plagiarism. Students that submit work that is not their own will be dealt with quickly and severely. It will be the recommendation of the faculty to remove such students from the College.

Opt. #3: Students that have a concern regarding any inappropriate conduct should bring it to the attention of their instructor, advisor, or Department Chair immediately. Inappropriate conduct situations will be reviewed immediately.

Opt. #4: Students taking this course should be aware of the potential diversity of the artistic perception of the

participants - particularly as applicable to violence, artistic statements, and nudity. Please keep your material and remarks professional and appropriate and be sensitive to individuals that have views different than your own.

***Americans with Disability Act – Disability Accommodation Statement**

SWOCC recognizes the contribution that a diverse student body brings to the educational experience. If you have a documented disability that may require assistance, please contact the Accessible Education Office. If you are a student who already has approved accommodations, you are required to talk with your instructors sometime during the first two weeks of the term regarding the accommodations you intend to use in their course.

The Accessible Education Office is located on the Southwestern Coos Bay campus in Student Support Services, Stensland Hall. For more information:

1. Visit Accessible Education Services or
2. Call (541) 888-1578 or
3. Email jesse.graf@socc.edu

***Notice of Non-Discrimination**

Students, their families, employees and potential employees of the Southwestern Oregon Community College District are hereby notified that Southwestern Oregon Community College does not discriminate on the basis of race, color, gender, sexual orientation, marital status, religion, national origin, age, disability status, gender identity, or protected veterans in employment, education, or activities as set forth in compliance with federal and state statutes and regulations. Any persons having inquiries concerning Southwestern's compliance with Title II, Title IV, Title VI, Title VII, Title IX and/or Section 504 or wish to make a complaint may contact the College's Affirmative Action Officer:

Vice President of Administrative Services
Southwestern Oregon Community College
1988 Newmark Ave., Tioga Hall, Room 511
Coos Bay, OR 97420
(541) 888-7402

Southwestern Oregon Community College offers the following career and technical education programs for all students regardless of race, color, gender, sexual orientation, marital status, religion, national origin, age, disability status, gender identity or protected veteran status, including those with limited English proficiency: Business, Office Technology, Computer Technology, Childhood Education, Criminal Justice, Culinary, Fire Sciences, Health Sciences, and Welding and Fabrication. Persons seeking further information concerning the vocational education offerings and specific pre-requisite criteria should contact:

Ali Mageehon, Vice President of Instruction and Student Services
Southwestern Oregon Community College
1988 Newmark Ave., Tioga Hall, Room 506
Coos Bay, OR 97420
(541) 888-7417 ali.mageehon@socc.edu

***Grievances**

For more information on the grievance process visit the Student Handbook.

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Class Cancellations (Faculty Absence)

Notices of class cancellations at SWOCC are made through an automated system called RAVE. Notices of class cancellations due to faculty absence will be sent to through the following devices: Voicemail to cell phone, text to cell phone, and email to college email account. To receive these important notices, please update your cell phone, telephone and email contact information through myLakerLink, click on the Student Information tab, then Rave User Portlet.

Cell Phone Use Policy

Given the disruptive potential posed by cell phones, students are required to keep cell phones off during class lectures. Use of cell phones during laboratory exercises are permissible, but please consider those around you.

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Day	Topic	Due
M 9/11	Course Introduction	Pass Code: Syllabus Quiz
W 9/13	ECGQ: Section 1.1: Definitions & Key Terms Section 1.2: Data & Sampling In-class Group Activity: Average of population versus average height of sample.	
M 9/18	ECGQ: Section 1.3: Frequencies & Tables Section 1.4: Experimental Design & Ethics In-class Group Activity: Make frequency table of class heights.	Pass Codes: 1.1, 1.2 Rough Draft of Project Proposal
W 9/20	ECGQ: Section 2.2: Histograms & Frequency Polygons Section 2.3: Measures of the Location of Data In-class Group Activity: Make histogram of class heights.	
M 9/25	ECGQ: Section 2.4: Box Plots Section 2.5: Measures of Center In-class Group Activity: Make box plot of class heights.	Pass Codes: 1.3, 1.4, 2.2, 2.3
W 9/27	ECGQ: Section 2.6: Skewness Section 2.7: Measures of Spread In-class Group Activity: Calculate mean and standard deviation of class heights.	
M 10/2	ECGQ: Section 3.1: Probability Terminology Section 3.2: Independent & Mutually Exclusive Events In-class Group Activity: Rolling dice.	Pass Codes: 2.4, 2.5, 2.6, 2.7 Final Draft of Project Proposal
W 10/4	ECGQ: Section 3.3: Two Basic Rules of Probability In-class Activity: Midterm review; share notes and tips with group.	
M 10/9	Midterm Exam, Part 1	Optional Pass Code: Midterm Review (Due: 2 pm!!!) Pass Codes: 3.1, 3.2, 3.3 Final Draft
W 10/11	Midterm Exam, Part 2	
M 10/16	ECGQ: Section 4.1: Discrete Probability Distributions Section 4.2: Mean & Standard Deviation In-class Group Activity: Peer feedback on project rough draft.	Week 6 Project Update
W 10/18	ECGQ: Section 4.3: The Binomial Distribution Section 5.1: Continuous Probability Distributions In-class Group Activity: Rolling dice: how many sixes?	

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M 10/23	ECGQ: Section 5.2: The Uniform Distribution Section 6.1 & 6.2: The Normal Distribution In-class Group Activity: Ivy leaves.	Pass Codes: 4.1, 4.2, 4.3, 5.1
W 10/25	ECGQ: Section 7.1 & 7.3: The Central Limit Theorem Section 8.1: Confidence Intervals for a Population Mean (σ Known) In-class Group Activity: Sample mean distribution of dice rolls.	
M 10/30	ECGQ: Section 8.2: Confidence Intervals for a Population Mean (σ Unknown) Section 8.3: Confidence Intervals for a Population Proportion In-class Group Activity: Calculate 95% CI for class height using group mean.	Pass Code: 5.2, 6.1-6.2, 7.1-7.3 Project Rough Draft
W 11/1	ECGQ: Section 9.1-9.4: Hypothesis Testing: The Big Idea Section 9.5 (Part 1): Tests of Significance for a Population Mean (σ Known) In-class Group Activity: Which die is loaded?	
M 11/6	ECGQ: Section 9.5 (Part 2): Tests of Significance for a Population Mean (σ Unknown) Section 9.5 (Part 3): Tests of Significance for a Population Proportion In-class Group Activity: Are class heights close to national average?	Pass Codes: 8.1, 8.2, 8.3
W 11/8	Q/A for Final Exam	
M 11/13	Final Exam, Part 1	Pass Codes: 9.1-9.4, 9.5 Part 1, 9.5 Part 2, 9.5 Part 3
W 11/15	Final Exam, Part 2	Project Final Draft Optional Pass Code: Final Review (Due 1 pm!!)