Course Number: MATH 251C-ES eStart Statistics
Hours: 100% Online, Credits - 4.0
Prerequisite(s): High school Algebra II or the equivalent
Term: Fall 2021 (8/30/2021 – 12/17/2021)
Faculty: Valerie LaVoice, MBA
Faculty Accessibility: Appointment via Zoom or by e-mail
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Syllabus Table of Contents

Course Description

Topics include basic measurements of central tendency and variability, frequency distributions, probability; binomial, Poisson, Chi-square, Student *t*, and normal distributions; sampling distributions, estimation of parameters, hypothesis testing, correlation, and linear regression. A graphing calculator will be required. (Prerequisites: high school Algebra II with a C or higher [or equivalent] or MATH 092 with a C or higher or by recommendation of the Math/Physics Department)

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Learning Outcomes

Educated Person Statement of Philosophy

Upon completion of this course, the student will be able to:

- Identify types of data and sampling methods.
- Identify, create, and interpret common statistical graphs.
- Calculate basic descriptive statistics (central tendency, variation, and position).
- Apply basic probability concepts (addition rule, multiplication rule, complement).
- Identify and solve problems involving discrete probability distributions.
- Identify and solve problems involving continuous probability distributions.
- Apply the Central Limit Theorem to problems involving sampling distributions.
- Calculate a confidence interval estimate of population mean, proportion, or standard deviation.
- Test a claim concerning a population mean, proportion, or standard deviation.
- Calculate and interpret the linear correlation coefficient.
- Produce a linear regression model to solve an application problem.

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Course Materials and Resources

eBook, Required

***Lumen OHM* Activation Code (ISBN: 9781640871632)**
An activation code is required to access the online textbook, *Introduction to Statistics*, published by Lumen Learning. All homework assignments and module tests will be completed in Canvas through the Lumen Online Homework Manager (OHM).

Printed Textbook, Optional

Students who prefer a printed textbook might consider using *Introductory Statistics* (OpenStax, licensed under Creative Commons Attribution License v4.0), ISBN: 9781506698236. The OpenStax textbook is the major source of material for the Lumen Learning eBook and the PowerPoint lectures used in this course. *Introductory Statistics* is available as a softcover printed book through the NHTI Bookstore.

Technology, Suggested

A TI-84 graphing calculator is strongly suggested.

However, Microsoft Office Excel is a good alternative. Several excellent web-based calculators are also available. When applicable, links to these calculators are provided in the Canvas course.

Software, Suggested

Students who plan to use a TI-84 calculator in this course would benefit from some additional programs that will simplify solving problems in Modules 8, 9, and 11. These programs are posted in the **TI-84 Calculator Programs** module in Canvas. Instructions for loading the programs onto your calculator are also provided in this module.

Textbooks, materials, and software are available online at eFollet unless specified by your instructor.

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Canvas Orientation

If this is your first time using Canvas at CCSNH, please complete the Canvas student orientation to familiarize yourself with its navigation and use.

Available Technical Support

If you need help navigating this course, explore the Canvas **Student Guide**. The Student Guide, Chat, and Phone offer helpful information and are always found by clicking on the button on the right side of every page in Canvas.

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Instructional Approach

The instructor has organized this online course into a series of modules containing the following pages:

- **Overview and learning objectives** related to the course content under study.
- **Reading assignment and resources** (videos, handouts, web sites, etc.) to enhance the material presented in the textbook.
- **PowerPoint lectures** prepared by the instructor that illustrate use of the TI-84 calculator whenever applicable.
- ***In Your Own Words*** assignment consisting of preparatory questions based on the reading, lecture, or both.
- The Canvas course also includes a **Discussions** forum where students are invited to ask, and answer, questions related to the content under study or any other aspect of the course.

Students are strongly advised to keep a notebook containing solutions to homework problems for use as a reference while taking tests. Students should plan to spend a minimum of 12 hours per week on coursework.

After satisfactorily completing the homework assignments, the student should be adequately prepared to take the corresponding test. The instructor reviews submitted tests and gives detailed feedback on answers marked incorrect by *Lumen* OHM. This feedback explains how the correct answer could have been obtained, with a focus on using the TI-84 calculator or the recommended web-based calculator. The student is expected to read these review comments and seek further explanation, if required. The review comments are intended to help the student avoid making similar mistakes on the final exam at the end of the course.

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Assessment of Learning

Assignment/Assessment Descriptions

- ***In Your Own Words* (IYOW)**

  These assignments consist of reading the assigned material (textbook, PowerPoint lecture, and/or video). The student is then expected to submit a typed response in the Canvas course by answering questions about the readings. The answers do not need to be lengthy, but they need to be long enough to show that the student has grasped the concept presented in the question. Since this class is conducted in an online format, these preparation assignments are of utmost importance to student success.

- **Homework**

  All homework assignments are to be completed on or before the due date specified Canvas. All assignments and due dates are shown in the **Course Summary** at the bottom of the **Syllabus** page in the Canvas course. No limits are placed on the number of attempts or time to complete problems.

  Most homework problems are accompanied by an explanatory video or document. Questions on specific homework problems may be forwarded to the instructor through the *Message instructor* feature in *Lumen OHM*.

- **Tests**

  The student's mastery of the course material is assessed by four module tests and a final exam, to be submitted by midnight on the due date indicated in Canvas. The tests are available for a two-day period. Tests have a 2-hour time limit. The problems on the tests are taken from the homework assignments; therefore, the best way to prepare for tests is to complete the homework assignments.

  If a known conflict with a test due date exists, the student is expected to contact the instructor prior to the test to arrange for a modified due date.

  To potentially earn additional partial credit for incorrect answers, the student is invited (not required) to submit work on test problems after submitting the test. The work can be typed in a rich text editor, or a photo of work done on paper can be attached to the question. This work must be legible, organized, and show how the submitted answer was obtained. In other words, this is not intended as an opportunity to correct errors on the test.

Grading Criteria and Grade Calculation

Category	% of Final Course Grade
In Your Own Words Questions (Canvas)	10%
Lumen OHM Homework	20%
Lumen OHM Module Tests	50%
Lumen OHM Final Exam	20%
Total	**100%**

Grading Schema	
A	93-100
A-	90-92
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-76
C-	70-72
D+	67-69
D	63-66
D-	60-62
F	< 60

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Course Schedule

Canvas Module	Dates	Lumen Textbook Module	Tests	Due Date
1	8/30 - 9/13	Module 1: Sampling and Data Module 2: Descriptive Statistics		9/6 9/13
2	9/14 - 9/20	Module 3: Probability	**Test 1**	9/20 **9/20**
3	9/21 - 10/4	Module 4: Discrete Random Variables Module 5: Continuous Random Variables		9/27 10/4
4	10/5 - 10/18	Module 6: Normal Distribution Module 7: Central Limit Theorem	**Test 2**	10/11 **10/18**
5	10/19 - 11/1	Module 8: Confidence Intervals		11/1
6	11/2 - 11/15	Module 9: Hypothesis Testing with One Sample	**Test 3**	11/15 **11/15**
7	11/16 - 11/22	Module 11: Chi-Square Distribution		11/22
8	11/23 - 12/6	Module 12: Linear Regression and Correlation	**Test 4**	12/6 **12/6**
	12/7 - 12/16	Final Exam Review		12/10
			Final Exam	**12/16**

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Course Notices

Lumen OHM Enrollment Requirement

The homework assignments, module tests, and final exam in this course are to be completed in Canvas after enrolling in *Lumen OHM*. To enroll, click the link for any homework assignment in Canvas and enter the activation code (printed as a PIN on the bottom of your NHTI Bookstore receipt or sent via e-mail if purchased online). A free, two-week trial period is available so that students waiting for financial aid can enroll without delaying participation in the course.

Students are expected to enroll in *Lumen OHM* via the NHTI Canvas course with permanent access by no later than **September 13, 2021** (which is the last day to drop the course for a full refund). Students who fail to meet the enrollment deadline are eligible to be dropped from the course as Never Attended.

Faculty E-mail Response Time

You can expect a response within 12 hours of sending an e-mail.

Posting of Grades

Grades on homework assignments and tests are continually kept up-to-date automatically and will be regularly imported into Canvas and viewable on the **Grades** page. Any discrepancy should be reported to the instructor as soon as possible.

Attendance Policy

Logging into an online class is not sufficient, by itself, to demonstrate academic attendance by the student. Participation is indicated by the student's activity in responding to the In Your Own Words questions and in the *Lumen OHM* web site, which automatically tracks the time spent on each assignment and test. Attendance can also be demonstrated by engagement in an academically related activity, such as initiating contact with the instructor to ask a course-related question.

A student who has only logged into the online class but has not demonstrated any engagement toward course outcome-specific assignments, or course-content specific discussion participation, will be identified as Never Attended on the official attendance roster. A student who has not completed any assignments for any continuous one-week period without contacting the instructor is subject to termination from the course with a grade of AF. All course work must be completed by **Friday, December 10, 2021**.

Late Assignment Policy

In Your Own Words (IYOW) assignments that become past due cannot be made up.

Homework assignments marked Past Due will receive a score of 0 to accurately reflect academic standing. The student may use a LatePass to extend the due date on an assignment for 48 hours. After all LatePasses are used, the student must contact the instructor for a due date extension. Homework problems completed after the original due date receive a late penalty of 50%.

Students are expected to make up a missed test within two calendar days of the original due date or by the date assigned by the instructor. A late penalty of 10% on the final score is imposed on a test submitted after the original due date. The student must contact the instructor to get access to a missed test. (LatePasses are not allowed on tests.)

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Recommended Sequence for Study

The following is a recommended sequence for study to properly prepare for tests:

1) Start with the **Canvas module** to see the learning objectives for the module.
2) View the **PowerPoint Lectures** provided by your instructor. These lectures give an overview of the key concepts from the textbook and include examples showing how to use technology to solve application problems like those you will encounter in the homework and tests.
3) Complete the **reading assignment** given on the *Reading and Resources* page. The online textbook provides example videos and solutions to example problems to help you assess your learning as you go.
4) After viewing the learning aids listed above, complete the ***In Your Own Words* assignment**; links to these assignments are found in each module and at the bottom of the *Syllabus* page in Canvas. The answers can be brief but should contain enough information to show you understand the concepts from the videos linked on the assignment page.
5) Complete the ***Lumen OHM* homework assignment** in Canvas. Links to the homework assignments are found in each module and at the bottom of the *Syllabus* page in Canvas. *Keep a notebook containing a copy of each homework problem and your worked-out solution to use as a reference while taking tests*.

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Where to Get Help

Here are some suggested things to try if you get stuck:

- Watch the **videos** provided in the textbook and on the *Reading and Resources* page to gain insights into statistical concepts and to learn how to solve sample problems.
- Click the ***Message instructor*** link in the homework window. An e-mail containing a copy of the problem you are working on and your question will be sent to your instructor who will then clarify or elaborate upon the problem via an e-mail response. Technology tips will be included whenever appropriate.
- Request a **Zoom session with the instructor**. Be sure to suggest convenient days and times for the meeting.
- Use **NHTI Online Tutoring** to connect with a tutor from the NHTI Math Lab via Zoom. In Canvas, go to the **Start Here** module and click the *NHTI Learning and Tutoring Resources* link.

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Academic Affairs Notices

Students are responsible for reading the Academic Affairs Notices, which are posted on the Academic Affairs Notices web page. These are the same for each course at NHTI and are updated each semester.

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