Course Number: MATH 251C-ES eStart Statistics	
Hours: 100% Online, Credits - 4.0	
Prerequisite(s): High school Algebra II or the equivalent	
Term: Fall 2023 (8/28/23– 12/16/23)	
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)

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.

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 unit tests will be completed in Lumen Online Homework Manager (OHM) through Canvas. The activation code is available online at www.nhtishop.com.

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, Strongly Suggested

A TI-84 graphing calculator is strongly suggested. The *desmos graphing calculator* provided with the Lumen OHM homework is a good alternative. Several excellent web-based calculators are also available at Statistics: The Art and Science of Learning from Data. 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 and instructions for loading them onto the calculator are posted in the **TI-84 Calculator Programs** module in Canvas.

Canvas Orientation

If you are unfamiliar with Canvas at CCSNH, please complete the [Canvas student orientation](#).

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.

Instructional Approach

The instructor has organized this online course into a series of eight Units, each containing the following pages or links:

- **Overview and learning objectives** related to the course content under study.
- **PowerPoint lectures** prepared by the instructor that illustrate use of the TI-84 calculator or web-based technologies whenever applicable.
- **Reading assignments and resources** (videos, handouts, web sites, etc.) to enhance the material presented in the textbook.
- *In Your Own Words* assignment consisting of preparatory questions based on the reading, lecture, or both.
- **Homework assignments** (one assignment per textbook module covered in the Unit). Links to the homework assignments are also available in the Course Summary at the bottom of the Syllabus page in Canvas.

The student will complete a **test** at the end of every other Canvas unit, covering two or three textbook modules. See the **Course Schedule** on page 5 for details.

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 work submitted with the test or via e-mail and gives detailed feedback on incorrect solutions. This feedback explains how the correct answer could have been obtained, with a focus on using the TI-84 or 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.

The Canvas course also includes a **Questions and Answers** forum where students are invited to ask (or answer) questions related to the content under study or any other aspect of the course.

Assessment of Learning

Assignment/Assessment Descriptions

The student's final grade will be based on completion of the following assignments. <mark>No additional assignments other than those described in this section will be offered.</mark>

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

  These assignments consist of reading the assigned material (textbook, PowerPoint lecture, and/or video), then answering five questions about major topics covered in the material. 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. The instructor provides feedback in Canvas on these assignments.

- **Homework**

  All homework assignments are to be completed on or before the due date specified Canvas. (See Late Assignment Policy on page 6 for more information.) 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* link in the homework window.

- **Tests and Final Exam**

  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 and final exam are available for a two-day period. **NOTE:** Requests to open a test or the final exam ahead of the original availability date will <u>not</u> be honored except in cases of extenuating circumstances that the student is able to support with appropriate documentation.

  The problems on the tests and final exam are taken from the homework assignments; therefore, the best way to prepare for tests is to complete the homework assignments.

  To potentially earn additional partial credit for incorrect answers, the student *<u>must show work on incorrect problems</u>* after submitting the test or final exam. 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 <u>show either how the submitted answer was obtained or how to obtain the correct answer</u>.

  NOTE
  - The instructor will not provide the solution to a test question marked incorrect unless the student submits work showing that he or she made a reasonable attempt to solve the problem.
  - When the student uses the TI-84 calculator to solve a problem, shown work will consist of the command used and the input typed into the command prompts.
  - A question marked wrong for which no work was submitted will receive no partial credit except in those instances where the student gave a correct answer but made a minor rounding or typographical error or used the wrong format (for example, entering a decimal when a fraction was expected).

Grading Criteria and Grade Calculation

Category	% of Final Course Grade
In Your Own Words Questions (Canvas)	10%
Lumen OHM Homework	20%
Lumen OHM Module/Unit 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

Course Schedule

Canvas Module	Lumen Textbook Module	Tests	Due Date
Unit 1	Module 1: Sampling and Data Module 2: Descriptive Statistics		9/5 9/12
Unit 2	Module 3: Probability	**Test 1**	9/19 **9/19**
Unit 3	Module 4: Discrete Random Variables Module 5: Continuous Random Variables		10/3 10/10
Unit 4	Module 6: Normal Distribution Module 7: Central Limit Theorem	**Test 2**	10/24 10/31 **10/31**
Unit 5	Module 8: Confidence Intervals		11/14
Unit 6	Module 9: Hypothesis Testing with One Sample	**Test 3**	11/21 **11/21**
Unit 7	Module 11: Chi-Square Distribution		11/28
Unit 8	Module 12: Linear Regression and Correlation	**Test 4**	12/12 **12/12**
	Final Exam Review		12/13 – 12/14
		Final Exam	**12/15**

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 **Monday, September 11, 2023** (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.

Course Drop Deadline

The deadline for withdrawing from this course with a grade of W (which has no impact on the student's GPA) is **Thursday, November 2, 2023**. Students must contact the NHTI Registrar to withdraw. Please see [Academic Affairs Notices](#) for more information.

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 **Saturday, December 16, 2023**.

Late Assignment Policy

Due dates for all assignments are listed in Canvas under **Course Summary** on the **Syllabus** page. Work submitted by 11:59 p.m. Eastern Time (EST) on the due date is considered on time.

At the start of the semester, each student is given 15 LatePasses. A LatePass may be redeemed any time past the original due date to gain access to the assignment without the need to contact the instructor. A late penalty of 20% is imposed on problems completed during the extension period.

Extensions on tests may be granted at the discretion of the instructor if the student asks <u>at least 12 hours before the test due date</u> and as long as the student has achieved a score of at least 50% of all homework assignments covered by the exam. LatePasses are not permitted to extend test due dates. The instructor may require evidence to support the need for an extension. If the student is granted an extension on a test, a 10% late penalty will be applied. <u>A student who does not meet the extended deadline arranged with the instructor will receive a score of 0 with no further opportunity to make up the test</u>.

No extensions are given on *In Your Own Words* (IYOW) assignments. The lowest IYOW score will be dropped.

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 *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 a post in the **Questions and Answers** forum. 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.

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.