

# STATISTICS

COURSE CODE: MAT1321

## COURSE DESCRIPTION

This is an introduction to statistics. The goal is basic statistical literacy, including understanding foundational vocabulary, using technology to produce simple statistical results, understanding how data is generated, and understanding simple statistics in context.

This course examines frequency distributions, measures of central tendency and dispersion, and the normal distribution curve. Students explore confidence intervals and sample size. The structure of hypothesis testing is introduced and applied to a variety of situations. Studies in correlation of data and sampling techniques are introduced.

## COURSE REQUIREMENTS

Math level of L3 or higher

## COMMUNICATION:

Please use your email in Canvas to contact the instructor throughout this course. Your instructor will respond to you within 12 hours of your email. Communication is a graded aspect of the course. The instructor will communicate with you using Canvas announcements and messaging, and outlook e-mail. Be sure to set your notifications in Canvas so that you will be notified of messages in your preferred method. We expect that you to monitor that method at least daily.

**TEXTBOOK:** (Textbooks are supplied by the Sending School or student unless alternative arrangements have been made)

- Essentials of Statistics, 6th edition, Triola, 2019, Pearson.
- 3-ring binder for master notebook, with section dividers and loose-leaf paper
- Software:
  - Fathom. Available for download at <http://fathom.concord.org/download/> (\$5.25 for one year)

## COURSE EXPECTATIONS

Reading at a college-level is the primary means of information gathering. Effective and efficient reading form the basis for college-level writing, research, and discussion. Students will be expected to read deeply to enable them to understand, discuss, and apply the information to a variety of academic tasks. Working with college-level reading requires determining the meaning of unfamiliar vocabulary, using main ideas and supporting details to support content literacy, and varying the use of critical reading techniques to logically comprehend concepts.

Writing at a college-level supports comprehension of content and enhances critical thinking. Students will be expected to engage in academic writing that demonstrates an understanding of content knowledge, a clear purpose, and organization flow. Attention to spelling, punctuation, and grammar are expectations for written assignments.

Communication is integral to success in an online college-level course. Students are expected to fully access all instructor-initiated communications, ask questions if clarification is needed, and follow-up on any actions assigned. Communication will be primarily in written modes but may include oral communication through videos and conferences.

Self-management is a core component of Perspectives in Learning. A key expectation is that students will adhere to established due dates and assignment guidelines for the course learning activities. All assignments, tests, and quizzes are to be submitted on the date indicated for full point consideration. Any work submitted after that time will receive partial point value as per the course guidelines.

## ADDITIONAL EXPECTATIONS

See Addendum A: Course Guidelines document for a comprehensive overview of course expectations.

## COURSE FORMAT

In order to integrate online educational experiences and knowledge into MAT1321 Statistics has been designed to incorporate synchronous and asynchronous learning opportunities. Students will engage with the instructor through regular feedback on assignments, periodic conferences/work sessions, and email communications. All are integral to the learning opportunities embedded in the course.

## COURSE OBJECTIVES & GOALS

Students who successfully complete this course will be able to:

- Construct and analyze frequency distributions using tables and graphs.
- Calculate mean, median, mode and standard deviation.
- Apply the properties of the normal distribution.
- Use probability theory to answer questions of chance.
- Use the central limit theorem to calculate probabilities.
- Construct confidence intervals for population means and proportions.
- Use the "t test," and p-value to test hypotheses for population means and proportions.
- Create two-variable scatter plots for x y paired data values.
- Calculate the correlation coefficient.
- Test the significance of the correlation coefficient using p-value.
- Describe orally and in written form the meaning of statistical results.

See Addendum B for a correlation of Landmark College General Education Goals & Perspectives in Learning Course Objectives.

## COURSE GRADING

Homework: 5%

Attendance and Participation: 5%

Notebook: 5%

“Second-Chance” Quizzes: 70%

Final Exam: 15%

## Explanation of Course Assessments and Grading Criteria

### THE PATTERN OF PROBLEMS

In general, you will see the same types of problems over and over again. Each time you see them you will be expected to solve the problems more and more independently. First you will see the problems in notes and handouts. Second, you will see them in homework, which will usually be from the odd numbered problems in the book. You are expected to check your work from the answers in the back. Third, you will see them in the quizzes. Finally, you will see them on the final.

### HOMEWORK (5%)

If you complete most or all of the homework assignment with clear effort, you will get a check (100%). If you complete more than 50% of the homework but less than 90%, you will get a minus (70%). Otherwise you will get 0%. All homework will be available on canvas. Homework must be done on time in order to get credit. You must show all appropriate work to get credit. We will drop the lowest three homework scores.

I expect you to check your homework, and correct any incorrect answers (by increasing your understanding, not simply copying the answers). You may get help on the homework from others, including the instructor or math support, but any help should be focused on learning how to solve the problems, not just help getting the correct answers. Students who copy the answers out of the back of the book usually do not learn the material and do poorly in the class.

## NOTEBOOKS (5%)

Notebooks will be checked each time there is a quiz retake day. Late notebooks will not be accepted. If you will not be in class, you must put your notebook in my mailbox in the Admin building (1st floor mail room) and send me an e-mail to let me know your notebook is there. Notebooks will be graded for completeness and organization.

Your notebook should be a 3-ring binder with section dividers. The sections should be labeled as follows:

- Handouts
- Homework
- Quizzes

Notebooks will be graded using this rubric:

- \_\_\_ Missing one or a few section dividers (-5)
- \_\_\_ No section dividers (-10)
- \_\_\_ Section dividers present but not labeled (-5)
- \_\_\_ Missing a few things (-5)
- \_\_\_ Missing lots of things and/or a whole section (-10 to -20)
- \_\_\_ A few things disorganized (-5)
- \_\_\_ Very disorganized (-10 to -20)

Note: Students may also propose alternative labels for the sections (for example, by unit). This will be negotiated on a case-by-case basis.

## PARTICIPATION AND ATTENDANCE (5%)

Students participation grade makes up 5% of your grade. Participation is an opportunity to engage in the course in a mature in a productive manner. There are two elements to your participation:

**First**, is your regular academic interaction in discussion boards following netiquette policy and assignment guidelines. The Primary post in your discussion board response is your initial response to the question. Usually the Primary Post has your answer to a specific question. The **Secondary** Post refers to reviewing your peers' responses and providing feedback to what others have shared. Students must do both a Primary Post and a Secondary Post.

**Second**, is your interaction with the content and the instructor. This includes required scheduled meetings and reaching out to the instructor with any questions via video, email, message, phone call or text.

## QUIZZES (70%)

There will be approximately 10 quizzes (see schedule). They will be given weekly at the start of teach week.

There will be two scheduled opportunities to re-take quizzes (see schedule). Quizzes can be re-taken if missed or in order to earn a better score. We will always take the highest quiz score earned.

Students may use a single 3x5 card to the quiz sessions as a memory aid. Students may include anything they want on the card.

The only technology that can be used on quizzes is fathom (on a laptop), the online probability calculator, and a calculator. No other websites or apps may be open on your computer, except music. Phones may not be used except for music.

Students who want extra time should plan to come in before class during office hours unless they have a class scheduled at that time. If they have a class scheduled at that time, we will make other arrangements on an individual basis.

## FINAL EXAM (15%)

The final exam will be held on Wednesday, May 13, in our classroom. The final exam will be cumulative.

On the day of the final, you may also re-take any quizzes that you have time for. You will not have time to re-take them all. If you are on time to the final and need extra time, we will schedule one extra hour to finish.

Students may bring two 3x5 cards to the final as a memory aid. Students may include anything they want on the cards.

If you miss the final, you must arrange a time to make it up. You must take the final by the end of the day Thursday, May 14. If you are making up the final, you may not bring the 3x5 card.

If you make arrangements for extra time or to make up the final, you need to be there, on time. You cannot make up extra time, and you cannot make up a make-up test.

## LANDMARK COLLEGE GRADING SCALE

Grade Range	Points	Definition
A 93-100	4.0	Excellent; distinguished achievement in all phases
A- 90-92	3.7	
B+ 87-89	3.3	Very good; high level of achievement in some phases
B 83-86	3.0	
B- 80-82	2.7	
C+ 77-79	2.3	Good; basic understanding of subject has been demonstrated
C 73-76	2.0	
C- 70-72	1.7	
D+ 67-69	1.3	Fair; minimal performance
D 63-66	1.0	
D- 60-62	0.7	
F 59 or below	0.0	

## MATH SUPPORT CENTER

Landmark College offers support for all math students outside of the classroom through DCAS. You are encouraged to do your homework regularly in math support and/or office hours. This will maximize the use of your time, because you can get help immediately and not spend too time being stuck or confused. (Some time being stuck and confused, and trying to solve the problem yourself, is good for you. But going on like that for too long is not useful.) The schedule will be distributed in class and is available via their page on Sharknet: <https://www.landmark.edu/academics/academic-support/centers-for-academic-support>

## WORK COMPLETION

Students who do best in this course complete readings and homework on a regular basis—and on the days that such assignments are due to be discussed and reviewed. Not coincidentally, these students are the ones who benefit most from the course and who also find it the most interesting. After all, it's much easier to become bored if you haven't done the day's requisite reading and/or homework. This also explains why "Preparation" and "Participation" are linked together in the assessment section above: students who are prepared by having completed the day's requisite reading/homework are much more likely to participate (or participate meaningfully) than those who don't.

## DISTRACTIONS

Social media, phones, and other similar apps and devices make it more difficult for you to learn, and they can also be distracting to those around you. Research shows that they distract you even when they are turned off, and even if they are in a pocket or bag. If you bring them to class, they should be silenced and put away. When working on this course, store your phone in another room.

## WORKING TOGETHER

It can be very helpful for some students to work together on daily assignments and to study together; this is encouraged when it does not result in one student simply copying another's work with no understanding.

## TOPICS AND SCHEDULE

Week	Topics	Assessments
1	Introduction Sampling and Data	Discussion

2	Sampling and Data	<b>Quiz 1</b>
3	Describing Data: Graphs and Measures	<b>Quiz 2 Discussion</b>
4	Describing Data: Graphs and Measures continued	<b>Quiz 3 Discussion</b>
5	Z-scores, Critical Values, and Significance	<b>Quiz 4 Retake Quizzes 1-3 Notebook Check</b>
6	Z-scores, Critical Values, and Significance continued	<b>Quiz 5 Discussion</b>
7	Probabilities of Normal Distributions	
8	Probabilities of Normal Distributions continued Confidence Intervals	<b>Quiz 6 Discussion</b>
9	Hypothesis Test Basics Hypothesis Test Basics Hypothesis	<b>Quiz 7 Retake Quizzes 4-6 Notebook Check</b>
10	Hypothesis Test Basics Hypothesis Test: 1 Mean or Proportion	<b>Quiz 8 Discussion</b>
12	Hypothesis Test: 2 Means	<b>Quiz 9</b>
13	Hypothesis Test: All Mixed Up Correlation and Regression	<b>Quiz 10 Discussion</b>
13	Final Exam preparation	<b>Retake Quizzes 7-10 Notebook Check Review</b>
14		<b>Final Exam</b>

## Addendum A

# Course Policies

## TECHNOLOGY AND SYSTEM REQUIREMENTS

Students will need the ability to access our online course content through a browser running on a desktop or laptop computer. Mobile phones and tablets may not be adequate or appropriate for some aspects of the course materials. All popular browsers are supported, but we recommend Chrome or Firefox if available. A web cam is highly recommended.

A productivity suite such as Microsoft Office, Microsoft Office 365, Google G-Suite, or Open Office is recommended or may be required for Landmark College Online courses.

If students are accessing courses from school networks, it is important to note that some required materials are hosted on public sites including YouTube and Vimeo.

Consider adding a text to speech option such as Speak It and a dictionary option such as Google Dictionary if needed.

## CLASSROOM BEHAVIOR EXPECTATIONS

"All students and staff of Landmark College are members of a unique educational community; whose goal is to enable each student to tap his or her full potential for success. Such a challenging goal requires tremendous individual effort on the part of each student and cooperative effort on the part of each member of the Landmark community. The guiding principles of the Landmark community include hard work, respect for others and oneself, honesty, personal accountability, and careful organization of time and materials."

More information on the Student Code of Conduct can be found on page 3 of the [Student Handbook](#).

## COMMUNICATION

Ongoing and timely communication is critical in a collaborative online learning environment. Therefore, in keeping with accepted standards of professionalism, responses to communications, originating from students or the instructor will take place within 24 hours (or by the end of the next business day in the case of weekend communication). In some cases, communications will be sent that require a response within 24 hours. Communication is a graded aspect of the course.

## DISCUSSION EXPECTATIONS

### Ground Rules for Online Discussions

1. **Participate:** Students must contribute to the conversations. Providing insightful commentary in the online discussions is a graded requirement for passing the course.
2. **Use Proper Writing Style:** A virtual classroom is a professional environment. Correct spelling, grammar, and style are expected in all scholarship and academic writing.
3. **Respect Diversity:** Derogatory and sarcastic comments and jokes that marginalize anyone are unacceptable. Offensive language—or language that could be construed as offensive—should be avoided and defused.
4. **No Flaming:** Criticism must be constructive, well-meaning, and well-articulated. Rants directed at any contributor are unacceptable. Profanity is unacceptable in any situation.

## HOMEWORK POLICY

Assignments are directly correlated to the learning taking place at the time. In addition, the course goals and objectives include a focus on maintaining an effective organization system to manage course materials, support assignment completion, and enhance participation in course discussions, quizzes, and tests. Therefore, established due dates will be strictly adhered to throughout the semester. If you find yourself challenged with an assignment, contact your instructor to discuss an Action Plan.

## OFFICE HOURS

Office hours will be scheduled by your course instructor and available in the syllabus. Times may vary as we seek to address schedules that vary across schools and states. Office Hours will be held via Conferences in the Canvas course website.

## College Policies

### STANDARDS OF CONDUCT

All students and staff of Landmark College are members of a unique educational community, whose goal is to enable each student to tap his or her full potential for success. Such a challenging goal requires tremendous individual effort on the part of each student and cooperative effort on the part of each member of the Landmark community. The guiding principles of the Landmark community include hard work, respect for others and oneself, honesty, personal accountability, and careful organization of time and materials. The following standards of conduct are examples and general expectations for all student members of the Landmark College community:

1. Honesty: Students will exhibit honesty in academic endeavors and in all aspects of campus life.
2. Safety: Students will make a commitment to contribute to a safe, clean, congenial, and productive living & learning environment.
3. Understanding: Students will make a commitment to understand their own strengths and challenges, and to work towards academic and personal growth.
4. Respect for Others: Students will show respect for the feelings, time, efforts, and physical well-being of others, and for their capacity for growth.
5. Respect for Property: Students will show respect for the property and materials of Landmark College as well as the personal property of all members of the Landmark community.
6. Respect for Community: Students will respect the rules and regulations of Landmark College and its governing bodies, and the laws of the State of Vermont and of the United States.

### ACADEMIC HONESTY AND PLAGIARISM POLICY

“As an academic community, Landmark strives to instill and foster intellectual honesty and integrity. Effective evaluation of student work can occur only in an environment in which intellectual honesty is respected. Academic dishonesty is a clear violation of academic integrity and academic responsibility.”

Academic integrity and responsibility are important in the classroom. Academic dishonesty may include, but is not limited to, plagiarism (of references or other students), failing to appropriately cite sources or figures, or submitting work completed by another person.

See more at: <http://catalog.landmark.edu/content.php?catoid=9&navoid=186#academic-dishonesty-and-plagiarism>

### ACCOMMODATIONS POLICY

Given the nature of Landmark Colleges' approach to teaching, students may find that many of the disability related academic accommodations which might be customary at traditional institutions of higher education may not be needed with a Landmark College online course.

However, if you feel that you may need individual academic accommodations, the College has policies and procedures in place to evaluate requests and ensure access. To view policies and procedures for requesting academic accommodations at Landmark College please visit: <https://www.landmark.edu/student-life/our-community/request-for-accommodations>