MATH310 Syllabus

Statistics

Fall 2020

Lecture Hours Per Week: 5, On Line with Zoom Sessions TBD, All sessions recorded for reference.

Lecture Hours Per Trimester: 40

No Laboratory Hours

Trimester Credit Hours: 3

Trimester Contact Hours: 44

Instructor: Mr. John McGlaughlin

Contact Information:

Cleveland University-Kansas City 913-234-0667

10850 Lowell Avenue, Room 2050 john.mcglaughlin@cleveland.edu

Overland Park, KS 66210

Course Canvas Page: Log in at <https://cleveland.instructure.com/login/ldap>

Office Hours: On campus: MWF 12:30– 2:00 pm, On line: contact me for an appointment or a one on one zoom session.

Prerequisite: *none*

Course Description:

In a data-centric culture, where data is collected on most everything we do and where, especially in the sciences, we value seeing “the data”, this course guides students through the essentials of interpreting statistical data. The student will develop critical thinking skills based on data for making decisions, testing hypotheses, and drawing conclusions. Students will use technology for generating statistics from large data sets. Concepts covered include data analysis, statistical inference, statistical methods such as ANOVA, controlled experiments, survey sampling, hypothesis testing, and regression. The fields of application are unlimited.

Required Textbook is Free:

## [Statistics from OpenStax](https://openstax.org/details/books/introductory-statistics), ISBN 1-947172-05-0, available in Canvas or:

* [View online](https://cnx.org/contents/30189442-6998-4686-ac05-ed152b91b9de) (Recommended format)
* [Download a PDF](https://d3bxy9euw4e147.cloudfront.net/oscms-prodcms/media/documents/Statistics-OP.pdf)
* [Download on iBooks)](https://itunes.apple.com/us/book/introductory-statistics/id898910154?mt=13)

You can use whichever formats you want. Web view works seamlessly on any device.

Required Materials:

* Access to a computer/laptop with Microsoft Excel and internet browser.
* Scientific Calculator (TI30XIIS or TI30XS, Graphing Calculators are not required and not allowed on exams.)

Attendance:

Attendance is taken based on assignment completion. Course credit will be given only if the student completes at least 85% of the work and completes the course with a passing grade. This course has approximately 32 assignment due dates so **if students miss more than 4 assignments they will be dismissed from the course with a grade of “XF”.** If your failure was due to extenuating circumstances, please provide the Dean of Students, David Foose, with documentation. He will assess your ability to remain enrolled in this class. You must contact the Dean, provide documentation and discuss your options within **one week of the above date** or the "XF" will remain. This is a course failure and may jeopardize future financial aid eligibility and graduation date. **Please be aware that should absences exceed 20 percent (6 assignments), there will be no reinstatement under any circumstances.**

**Required Monitored Component:**

All online students are required by CUKC to participate in a monitored component of the course. For this course, it will be Exam #1, scheduled on Friday September 11th, 8 – 10 am or 6 – 8 pm in a room to be determined at the CUKC campus. Students will be required to show a government issue ID with photograph in order to complete the test. If this time or location does not work for you, two additional on campus times will be offered. Students must communicate any challenges with this requirement directly to their instructor prior to the exam date. Students may choose to take the exam scheduled at CUKC or at a qualified testing center closer to their location, which will be at the student’s own expense. The exam must be completed within a 48 hour window. Failing to attend a monitored exam will result in zero points given for that exam. The other exams are taken online. Please email me if you have any questions about the WebAssign enrollment process or the monitored exam.

**Evaluation:**

3 Exams 72%

Assignments (in WebAssign) 14%

 Projects/Labs 14%

Grading Scale:

90 to 100 A Any incident of academic dishonesty will result in failure of the

80 to 89 B course. The instructor reserves the right to modify, but not to raise,

70 to 79 C the grading standards and to modify the syllabus as necessary.

60 to 69 D Students will be notified of such modifications. **All assignments**

0 to 59 F **are to be done individually unless otherwise stated** **by the instructor.**

**No extra credit**. A class curve may be assigned to the course grade at the end of the term.

**Late Assignments:**

Late assignments will have a grade reduction depending on how late it is until the graded assignments have already been returned to the class, at which point the grade will be zero.

**Academic Policies:**

The College policies regarding course withdrawals, course incompletes, etc. will be followed.

**Make-up Examinations:**

Exams cannot be made up without a written document explaining the reason for missing the due date. The instructor reserves the right to determine if a make-up should be allowed. Remember that technology issues are not an excuse for missing any due dates. Make-up exams will be different and more rigorous than the original. If you miss the make-up exam you will receive a zero on the test. Only one exam can be made up regardless of the situation. If you miss more than one exam, zeros are assigned. **Retake examinations are not allowed.**

**Academic Policies:**

The College policies regarding course withdrawals, course incompletes, etc. as stated in the Student Handbook will be followed.

**Special Accommodations:**

The College has adopted the following definition in determining whether a particular student does, in fact, have a disability that may need accommodation. A disability is “a physical or mental impairment that substantially limits one or more of the major life activities of an individual, such as caring for one’s self, learning, working, performing manual tasks, walking, seeing, hearing, speaking and breathing,” as well as “concentrating, thinking, and communicating,” and “the operation of major bodily functions,” such as “functions of the immune system, normal cell growth, and digestive, bowel, bladder, neurological, brain, respiratory, circulatory, endocrine, and reproductive functions.” Impairment may be “any physiological disorder or condition, cosmetic disfigurement, anatomical loss, or mental or psychological disorder such as retardation, organic brain syndromes, emotional or mental illness, and specific learning disabilities.” (American with Disabilities Act, as amended (“ADA”); Section 504 of the 1973 Rehabilitation Act.)

If you have a disability under this definition, see the office of Academic Records and Support as soon as possible.  No accommodations will be made for you without official approval from the office of Academic Records and Support.

**Standards of Conduct:**

You are expected to adhere to the highest professional, ethical, and personal standards of conduct. Any activities that violate the standards of student conduct specified in the College Catalog, Student Handbook, or Clinic Manual will form the basis of disciplinary action towards those involved. Students may be asked to leave class and an incident report may be submitted to student services.

**Grievance Procedure:**

If a student feels the method of teaching and/or examining or the conduct of the instructor does not meet their expectations, the following acceptable procedure must be followed in the order below. It is a good idea to make a written copy of your concern(s).

1. Course Instructor: John McGlaughlin

(Always come to the instructor first! Please make an appointment during office hours. Complaining to other students, instructors, or administrators is unprofessional and detrimental to all those involved including yourself.)

2. Dean of College of Health Sciences: Dr. Chris Todden

3. VP of Academic Affairs: Dr. Cheryl Carpenter-Davis

Should you ignore this chain of responsibility, the instructor reserves the right to conclude the matter in any way deemed appropriate.

**Course Goals:**

By the end of the course, the student will be able to:

1. Correlate statistical information and methods to biological applications.
2. Interpret graphical representations of data.
3. Evaluate Linear Models of data.
4. Calculate probabilities using the normal and binomial models.
5. Conduct hypothesis tests.
6. Employ various statistical methods.
7. Appraise which statistical procedures are appropriate.
8. Apply technology to carry out statistical procedures.
9. Evaluate statistical output.
10. Critically examine scientific papers.

**The Vision, Mission Statement, and Core Values of Cleveland University**

**Cleveland University Institutional Vision**

The Cleveland vision is to be recognized and respected as a leader in health promotion.

**Cleveland University Mission Statement**

The Cleveland mission is to provide strong student-centered academic and professional education with a focus in the areas of life sciences and health promotion through education, scholarship and service.

**Institutional Core Values**

*Integrity/Accountability*

* Responsible and ethical behavior
* Honest and open communication
* Responsibility for our individual actions

*Excellence/Service*

* Highest quality in teaching, scholarship and service
* Embrace compassion

*Diversity/Respect*

* Treat all individuals with dignity and respect
* Encourage an environment that attracts, nurtures and supports diversity
* Sensitivity to differences in learning styles, ideas and beliefs

*Collaboration/Teamwork*

* Partnerships, interaction and relationships
* Cooperative efforts to achieve our common goals

*Health/Well-being*

* Encourage activities and behaviors that contribute to a healthy lifestyle
* Chiropractic care is essential for optimizing health and well-being

*Innovation/Creativity*

* Intellectual curiosity
* Enthusiastic pursuit of new ideas

**Undergraduate Program Mission**

            The Cleveland Undergraduate Studies program mission is to provide a respected and recognized undergraduate studies program specializing in life sciences and health promotion preparing graduates to continue in health-related education programs.

**Cleveland Chiropractic College Code of Honor and Integrity**

Honesty, integrity and high ethical standards are essential features of Cleveland Chiropractic College. The honor code helps to build trust within the college community and instills common values and principles that will extend into all facets of personal and professional life.

*As members of the Cleveland Chiropractic College community all faculty, staff and students are bound by honor to uphold professional standards of respect, honesty, integrity and social responsibility. We are responsible for promoting ethical behaviors and endeavors both in and out of the classroom and will act in a manner which demonstrates concern for the personal dignity, rights and freedoms of all members of the community. We pledge that we will not take unfair advantage of any other member of the College community either by lying, cheating or plagiarizing. We are respectful of college property and the property of others.*

*I acknowledge that I am responsible for upholding the Honor Code at all times and that failure to do so will result in disciplinary action.*

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*Signature Date*

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*Printed Name*

**General Course Outline:**

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| --- | --- | --- | --- |
| **Date** | **Day** | **Chapters** | **Topics** |
| 8/31/20 | M | -- | Introduction/Syllabus |
| 9/1/20 | T | 1.1/1.2 | Key Terms, Data and Sampling |
| 9/2/20 | W | 1.3/1.4 | Frequency/Experimental Design |
| 9/3/20 | Th | 2.1/2.2 | Graphical Representations |
| 9/4/20 | F | 2.3/2.4 | Data Locations |
| 9/8/20 | Tue | 2.5/2.6 | Measures of the Centers of Data |
| 9/9/20 | Wed | 2.7 | Measures of the Spread of Data |
| 9/10/20 | Thu | 3.1/3.2 | Terminology and Events |
| 9/11/20 | Fri | 3.3/3.4/3.5 | Basic Rules, Contingency Tables and Diagrams |
| 9/14/20 | Mon | 4.1/4.2 | Discrete Random Variable and Expected Value |
| 9/15/20 | Tue |  | Review |
| **9/16/20** | **Wed** |  | **Exam 1** |
| 9/17/20 | Thu | 4.3 | Binomial Distribution |
| 9/18/20 | Fri | 4.4/4.5/4.6 | Other Distributions |
| 9/21/20 | Mon | 5.1/5.2 | Continuous Random Variable |
| 9/22/20 | Tue | 5.3/5.4 | Distributions |
| 9/23/20 | Wed | 6.1/6.2 | The Standard Normal Distribution |
| 9/24/20 | Thu | 7.12 | The Central Limit Theorem |
| 9/25/20 | Fri | 7.3 | Using the Central Limit Theorem |
| 9/28/20 | Mon | 8.1/8.2 | Single Population Mean |
| 9/29/20 | Tue | 8.3 | Population Proportion |
| 9/30/20 | Wed | 9.1/9.2 | Hypothesis Testing with One Sample |
| 10/1/20 | Thu |  | Review |
| **10/2/20** | **Fri** |  | **Exam 2** |
| 10/5/20 | Mon | 9.3/9.4 | Distribution Needed, Decision and Conclusion |
| 10/6/20 | Tue | 9.5 | Hypothesis Test Examples |
| 10/7/20 | Wed | 10.1/10.2 | Hypothesis Testing with Two Samples |
| 10/8/20 | Thu | 10.3/10.4 | Two Independent Population Proportions |
| 10/9/20 | Fri | 11.1/11.2 | Chi-Square Test for Goodness of Fit |
| 10/12/20 | Mon | 11.3/11.4 | Test for Independence and Homogeneity |
| 10/13/20 | Tue | 11.5/11/6 | Comparison of Chi-Square Tests |
| 10/14/20 | Wed | 12.1/12.2 | Linear Regression |
| 10/15/20 | Thu | 12.3/12.4 | Regression Equation and Correlation Coefficient |
| 10/16/20 | Fri | 12.5/12.6 | Prediction/Outliers |
| 10/19/20 | Mon |  | Review |
| **10/20/20** | **Tue** |  | **Final Exam** |