Course: INST 314: Statistics for Information Science

Section: ESG1; Tuesday / Thursday 8:00 – 9:15 AM

Room: BLD1 134

Instructor: Dr. C. Scott Dempwolf (he/him/his)

Office Hours: TBA / by appointment

Email: dempy@umd.edu

Phone: TBA

**Catalog Description**

Basic concepts in statistics including measure construction, data exploration, hypothesis development, hypothesis testing, pattern identification, and statistical analysis. The course also provides an overview of commonly used data manipulation and analytic tools. Through homework assignments, projects, and in-class activities, you will practice working with these techniques and tools to create information resources that can be used in individual and organizational decision-making and problem-solving.

**Extended Course Description**

Advances in hardware and software technologies have led to a rapid increase in the amount of data collected, with no end in sight. Decision making in the coming decades will depend, to an ever greater extent, on extracting meaning and knowledge from all that data. In this class we focus on one branch of statistics, inferential statistics, to help us reason about data. By gathering datasets, formulating proper statistical analyses and executing these analyses, information professionals play a significant role in bridging the gap between raw data and decision making.

This course will introduce basic concepts in data analytics including study design, measure construction, data exploration, hypothesis testing, and statistical analysis. The course also provides an overview of commonly used data manipulation and analytic tools. Through homework assignments, projects, and in-class activities, you will practice working with these techniques and develop statistical reasoning skills.

**Student Learning Outcomes**

Upon successful completion of the course, students will be able to:

1. Select and evaluate various types of data to use in decision making;
2. Use prescriptive and descriptive analyses to reach defensible, data-driven conclusions;
3. Select and apply appropriate statistical methods;
4. Use MS Excel and R for basic data manipulation and analysis;
5. Critically evaluate data analyses and develop strategies for making better decisions.

**Textbooks and Readings**

**Verzani, J. (2004), Using R for Introductory Statistics, Chapman & Hall/CRC. ISBN/ASIN: 1584884509 ISBN-13: 9781584884507**

**Available as a free pdf:** [**https://cran.rproject.org/doc/contrib/Verzani-SimpleR.pdf**](https://cran.rproject.org/doc/contrib/Verzani-SimpleR.pdf)

Diez, D., Barr, C., and Ҫetinkaya-Rundel, M. (2015), *OpenIntro Statistics*, 3rd ed., OpenIntro. <https://www.openintro.org/stat/textbook.php>

 Available as a free pdf download, color hardcover of black & white paperback for purchase, and free interactive website.

**Required Technology**

We will do programming exercises during most classes, so have a computer and be prepared to write code. Any operating system will do. If you don’t have access to a computer, contact me before the first class.

**Grading**

Your final grade for the course is computed as the sum of your scores on the individual elements below (100 possible points total), converted to a letter grade:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| A+ 97-100\* | B+ 87-89.99 | C+ 77-79.99 | D+ 67-69.99 |  |  |  |  |
| A 93-96.99 | B 83-86.99 | C 73-76.99 | D 63-66.99 |  |  |  |  |
| A- 90-92.99 | B- 80-82.99 | C- 70-72.99 | D- 60-62.99 | F 0-59.99 |  |  |  |

Please note: iSchool policy states that if this is a core course for your degree program, you must earn a B or higher to remain in good academic standing. Any students who earn a B- or lower must retake the course to remain in the program. If you have any questions about this policy, please contact your academic advisor. The policy is also spelled out on p. 5 of the Program Handbook. <https://ischool.umd.edu/sites/default/files/users/user37/HCIMHandbook2020-2021.pdf> (Links to an external site.)

**Course Grading Criteria**

|  |  |  |
| --- | --- | --- |
| **Grade Item** | **Points** | **Percent of Final Grade** |
| Homework | 10 x 40 points each = 400 | 40% |
| Quizzes | 6 x 50 points each = 300 | 30% |
| Midterm Exam | 150 | 15% |
| Final Project | 150 | 15% |
| Class participation | Up to 20 | 02% |
| Total | 1020 | 102% |

**Course Policies**

**COVID-19 COURSE POLICY MODIFICATIONS**

As this syllabus is being written the University is still issuing Covid guidance and cases are increasing almost everywhere. Standard course policies are listed below. However, given the unpredictability of living in a pandemic reasonable accommodations will be made during the fall 2021 semester. In particular, policies concerning attendance and late work should be considered guidelines. If you must miss class or if you will miss an assignment deadline for Covid-related reasons please email me as soon as possible. I will do my best to produce asynchronous lectures and make them available throughout the semester. This is a goal, not a guarantee. We are all trying to get through this as best we can.

We are all expected to follow University Covid guidance on vaccinations, testing, masks, and other public health measures.

**A Note on Standard Policies**

The essential purpose of the university’s policies (<https://president.umd.edu/administration/policies>) is to enable all of us to fully participate in an equitable, accessible and safe academic environment so that we each can be challenged to learn and contribute most effectively. Policies are, by necessity, often written in impersonal, legalistic language. Nevertheless, we are all responsible for following them. The following sections summarize selected policies as implemented for this course, and provide links to additional information. We are all responsible for knowing and following all university policies.

**Participation Policy**

Participation grades involve engaging effectively with in-class exercises, participating in group work, interacting with your instructor and peers, and attending class regularly.

**Late Work**

Late work is not accepted in this course. In the event of an unforeseeable, documentable emergency an exception may be made at the sole discretion of the instructor.

1. Regular punctual attendance is expected of all students. Students are expected to remain for the entire class period. Students are responsible for all announcements, material covered, and assignments due when absent from class. The instructor recommends exchanging contact information with other students to share lecture notes. Tardiness and repeated class interruptions may reduce the student’s participation grade.
2. Students are expected to read the all chapter assignments before coming to class and be prepared to discuss the topics and participate in class/group activities and exercises in class.
3. Late project submissions are not accepted. Projects not submitted by the deadline will receive an automatic grade of zero.
4. Each assignment must be submitted via the method requested in the instructions. Assignments submitted via email will not be graded. Assignments not submitted as required by the instructions will not be graded.
5. Students are expected to put away all electronic devices during lectures. The use of mobile devices (i.e. phones, tablets, etc.) during the lecture is disruptive and disrespectful. Texting, using email, playing games, chatting and browsing the web is not permitted during the lecture session unless doing so is a part of the class session’s planned activities and students are instructed to do so by the instructor. Failing to follow this expectation may result in a reduced participation grade.
6. This class frequently requires group work, in-class exercises, and in-class research so DO bring a mobile device, tablet, or laptop to class for use during designated times.
7. Exams must be taken as scheduled. If you are unable to take your exam at the scheduled time due to an emergency (hospitalization, car accident, etc.) contact the instructor prior to the exam time to make arrangements to take the exam. Documentation will be required. Make-up exams will only be given in the event of an extreme emergency and at the sole discretion of the instructor.
8. The instructor will reply to student emails within 72 hours Monday through Friday. Emails received on university holidays or during the weekend will receive a response when the university reopens.
9. Students shall use APA formatting for the all written assignments in this course.

In the event of university closure due to inclement weather or other unanticipated events, due dates as posted on the course schedule will remain in effect unless a change is made by the instructor. Such a change will be posted in the course management system as an announcement and sent via email.

**Syllabus Change Policy**

This syllabus is a guide for the course and is subject to change with advance notice. Changes will be posted in ELMS. The ELMS course site is the definitive location for all course work, and communication, including class schedules, assignments and deadlines.

**Academic Integrity**

Academic dishonesty is a corrosive force in the academic life of a university. It jeopardizes the quality of education and depreciates the genuine achievements of others. Apathy or acquiescence in the presence of academic dishonesty is not a neutral act. All members of the University Community - students, faculty, and staff - share the responsibility to challenge and make known acts of apparent academic dishonesty. As a student, you have a responsibility to avoid violations of the Code of Academic Integrity. This includes:

* Cheating: "Intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise."
* Fabrication: "Intentional and unauthorized falsification or invention of any information or citation in an academic exercise."
* Facilitating Academic Dishonesty: "Intentionally or knowingly helping or attempting to help another to commit an act of academic dishonesty."
* Plagiarism: "Intentionally or knowingly representing the words or ideas of another as one's own in an academic exercise."

For additional information on the Code of Academic Integrity see: <http://shc.umd.edu/SHC/StudentAcademicDishonesty.aspx> (Links to an external site).

**Students with Disabilities**

The University is legally obligated to provide appropriate accommodations for students with disabilities. The campus' Accessibility & Disability Service (ADS) works with students and faculty to address a variety of issues ranging from test anxiety to physical and psychological disabilities. If a student or instructor believes that the student may have a disability, they should consult with ADS (301-314-7682, adsfrontdesk@umd.edu, [https://www.counseling.umd.edu/ads/](https://www.counseling.umd.edu/ads/%20) (Links to an external site). To receive accommodations, students must first have their disabilities documented by ADS. The office then prepares an Accommodation Letter for course instructors regarding needed accommodations. Students are responsible for presenting this letter to their instructors.

**Attendance Policy**

University policy excuses the absences of students for illness, religious observances, participation in University activities at the request of university authorities and compelling circumstances beyond the student's control. Students who miss a single class for a medical reason are not required to provide medical documentation, but students who are absent more than once are responsible for providing various forms of documentation, depending on the nature of the absence. For additional information on attendance policies, see [https://www.usmd.edu/regents/bylaws/SectionIII/III510.html](https://www.usmd.edu/regents/bylaws/SectionIII/III510.html%20) (Links to an external

site.) (religious observance) and [https://president.umd.edu/administration/policies/section-v- student-affairs/v-100](https://president.umd.edu/administration/policies/section-v-%20student-affairs/v-100)g (Links to an external site.) (medical absence).

**Course Evaluation**

Course evaluations are a part of the process by which the University of Maryland seeks to improve teaching and learning. The University Senate approved the implementation of a standard, online, University-wide course evaluation instrument. Each course evaluation contains a set of universal questions, and some are supplemented by questions from specific colleges. Students who leave no "Pending" evaluations in their Evaluation Dashboard each semester can view the aggregate results of a sub-set of universal items online. Across the University, course evaluations are being administered through a web-based system called CourseEvalUM. All information submitted to the Evaluation System is confidential. Instructors and academic administrators can only view summarized evaluation results after final grades have been submitted. Instructors and academic administrators cannot identify which submissions belong to which students. This standardized set of evaluation results provides the University with useful information on teaching and student learning across the campus. For additional info see Student Fast Facts at [https://www.irpa.umd.edu/Assessment/CourseEval/StuFastFacts.html](https://www.irpa.umd.edu/Assessment/CourseEval/StuFastFacts.html%20) (Links to an external site).

**Emergency Preparedness**

See: [https://prepare.umd.edu/](https://prepare.umd.edu/%20) (Links to an external site.)

**Course Schedule**

This preliminary schedule provides *approximate* dates of topics and major assignments. The ELMS course will be used to provide specific dates and detailed information on all assignments (major and otherwise).

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Week | Dates | Lecture | Lab | Homework | Quizzes |
| 1 | 8/31 – 9/2 | What is Statistics for InfoSci? | Methods used by iSchool researchers | Homework 1 |  |
| 2 | 9/7 – 9/9 | Intro to R | Intro to Statistics with R |  |  |
| 3 | 9/14 – 9/16 | Descriptive Statistics | Statistics with Excel | Homework 2 | Quiz 1 |
| 4 | 9/21 – 9/23 | Inferential Statistics | Inferential Statistics | Homework 3 |  |
| 5 | 9/28 – 9/30 |  |  | Homework 4 | Quiz 2 |
| 6 | 10/5 – 10/7 |  |  | Homework 5 |  |
| 7 | 10/12 – 10/14 |  |  |  | Quiz 3 |
| 8 | 10/19 - 10/21 |  | Midterm Exam |  |  |
| 9 | 10/26 – 10/28 |  |  | Homework 6 | Quiz 4 |
| 10 | 11/2 – 11/4 |  |  | Homework 7 |  |
| 11 | 11/9 – 11/11 |  | Final Project (start) | Homework 8 | Quiz 5 |
| 12 | 11/16 – 11/18 |  |  | Homework 9 |  |
| 13 | 11/23 – 11/25 |  | Thanksgiving – no class |  |  |
| 14 | 11/30 – 12/2 |  |  | Homework 10 | Quiz 6 |
| 15 | 12/7 – 12/9 |  | Final Project Due |  |  |
| 16 | 12/14 – 12/16 |  |  |  |  |