



Course Syllabus – Last Updated: August 29, 2018

# Data Analytics for Information Professionals

**INST 627**  
**Fall 2018**

## Learning Outcomes

Information professionals play a significant role in bridging the gap between raw data and decision making. Throughout the semester, you will learn how to effectively make use of data in the face of uncertainty: how to collect data, how to analyze data, and how to use data to make inferences and conclusions about real world phenomena.

After successfully completing this course you will be able to:

- recognize the importance of data collection, identify limitations in data collection methods and other sources of statistical bias, and determine their implications and how they affect the scope of inference.
- use R to summarize data numerically and visually, and to perform data analysis.
- have a conceptual understanding of the unified nature of statistical inference.
- apply estimation and testing methods to analyze single variables or the relationship between two variables in order to understand natural phenomena and make data-based decisions.
- model numerical response variables using a single explanatory variable or multiple explanatory variables in order to investigate relationships between variables.
- interpret results correctly, effectively, and in context without relying on statistical jargon.
- critique data-based claims and evaluate data-based decisions.
- showcase your statistical skills through a research project that can be used in your portfolio.

## Required Resources

Course website: [elms.umd.edu](http://elms.umd.edu)



OpenIntro Statistics  
Diez, Barr, Çetinkaya-Rundel  
CreateSpace, 3rd Edition, 2015  
(ISBN: 978-1943450039)

The textbook is freely available online (<http://openintro.org/os>). You're welcomed to read on screen or print it out. If you prefer a paperback version you can buy it at the cost of printing (around \$10) on Amazon (<http://openintro.org/os>). The textbook store will not carry copies of this text.

R: Free download at <https://cran.r-project.org/index.html>

RStudio: Free download at <https://www.rstudio.com/>

**Dr. Hernisa**

**Kacorri**

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### Class Meets

Wednesdays

2:00pm – 4:45pm

HBK #0105

### Office Hours

HBK #2118A

Wednesdays

5:00pm-6:00pm

### Course Communication ELMS

announcements or email will be used to send time-sensitive information.

Please contact me through ELMS email if you want to discuss questions, absences, or accommodations. Here is a link with helpful guidance on writing professional emails: [ter.ps/email](mailto:ter.ps@email).

## Optional Resources

This is a list of books that you might find interesting. You will not be tested on them.

Not super technical for basic statistics:

- **The Cartoon Guide to Statistics** by by Larry Gonick, WoollcottSmith, Woolcott Smith (1st Edition)
- **The Manga Guide to Statistics** by Shin Takahashi and Trend-Pro Co., Ltd

Assumes basics statistics knowledge, explains gotchas and pitfalls:

- **Statistics Done Wrong: The Woefully Complete Guide** by Alex Reinhart (1st Edition)

Not really technical, how statistics are used to deceive in everyday life:

*Note:* the book is written in the 1950.

- **How to Lie with Statistics** by Darrell Huff

## Activities, Learning Assessments, & Expectations for Students

### Homework

There will be a total of 5 homework assignments. These assignments are meant to assess your mastery of the topics and techniques covered in class. These assignments will be 1 to 2 page reports (as indicated in the assignment). You may work with your colleagues to figure out the underlying concepts and problem-solving processes, but are expected to work **individually** to answer the specific problems that are assigned. Completed assignments will be submitted via Canvas/ELMS.

### Project

Either alone or in groups of up to 3, you will work on a final project where you create an experiment, collect data, analyze it, and present your results. There will be a few assignments specific to the group project, including a project proposal, a progress report (update), a presentation, and a final paper. Additional details about the group project will be provided in ELMS/Canvas and discussed in class.

### Exams

There will be a midterm worth 20% of the course grade. This exam provides an opportunity for you to test your understanding of the concepts, techniques, and problems associated with statistical reasoning. In order to learn and understand the material fully it is important to review and revisit it multiple times.

### Participation

This may involve quizzes, in-class participation and engagement in course related discussions. (To be revised)

## Campus Policies

It is our shared responsibility to know and abide by the University of Maryland's policies that relate to all courses, which include topics like:

- Academic integrity
- Student and instructor conduct
- Accessibility and accommodations
- Attendance and excused absences
- Grades and appeals
- Copyright and intellectual property

Please visit [www.ugst.umd.edu/courserelatedpolicies.html](http://www.ugst.umd.edu/courserelatedpolicies.html) for the full list of campus-wide policies and follow up with me if you have questions.

## Course-Specific Policies

### Late Work

Timely submission of the completed assignments is essential. The due date of each assignment will be stated clearly in the assignment description. If an assignment due date is a religious holiday for you, please let me know at least one week in advance, so an alternate due date can be set. Late assignments will be penalized by 50% if they are turned in within one week of the due date and not accepted if they are more than one week late. (Please note that ELMS will mark your assignments as late if submitted a few seconds past the deadline. I would recommend that you submit your assignments not later than 5 minutes prior to the deadline.) Missed quizzes or exams without a documented, excused absence cannot be made up.

### Devices

I expect you to make the responsible and respectful decision to refrain from using your cellphone or other devices in class for tasks that are not related to in-class activities. If you have critical communication to attend to, please excuse yourself and return when you are ready. For more information about the science behind the policy watch: <http://youtu.be/WwPaw3Fx5Hk>

### Office Hours

Please visit me during office hours. This is an opportunity to ask questions about the material covered in the reading materials or in lecture. If you are having trouble in the course please talk to me as soon as possible. If you do poorly or lower than you expected on the first exam, it is imperative that you come to office hours so that we can figure out the problem early.

### Accommodations

Please come and see me as soon as possible if you think you might need any special accommodations for disabilities. In addition, please contact the Disability Support Services (301-314-7682 or <http://www.counseling.umd.edu/DSS/>). Disability Support Services will work with us to help create appropriate academic accommodations for any qualified students with disabilities.

## Get Some Help!

Taking personal responsibility for your own learning means acknowledging when your performance does not match your goals and doing something about it. I hope you will come talk to me so that I can help you find the right approach to success in this course, and I encourage you to visit <http://tutoring.umd.edu> to learn more about the wide range of campus resources available. In particular, everyone can use some help sharpen their communication skills (and improving their grade) by visiting the <https://www.gradschool.umd.edu/graduate-school-writing-center> and schedule an appointment with the campus Writing Center. Finally, if you just need someone to talk to, visit [counseling.umd.edu](http://counseling.umd.edu).



## Names/Pronouns and Self Identifications

The University of Maryland recognizes the importance of a diverse student body, and we are committed to fostering equitable classroom environments. I invite you, if you wish, to tell us how you want to be referred to both in terms of your name and your pronouns (he/him, she/her, they/them, etc.). The pronouns someone indicates are not necessarily indicative of their gender identity. Visit [trans.umd.edu](http://trans.umd.edu) to learn more.

Additionally, how you identify in terms of your gender, race, class, sexuality, religion, and dis/ability, among all aspects of your identity, is your choice whether to disclose (e.g., should it come up in classroom conversation about our experiences and perspectives) and should be self-identified, not presumed or imposed. I will do my best to address and refer to all students accordingly, and I ask you to do the same for all of your fellow students.

## Grades

Grades are not given, but earned. Your grade is determined by your performance on the learning assessments in the course and is assigned individually (not curved). If earning a particular grade is important to you, please speak with me at the beginning of the semester so that I can offer some helpful suggestions for achieving your goal.

All assessment scores will be posted on the course ELMS page. If you would like to review any of your grades (including the exams), or have questions about how something was scored, please come to my office hours.

Late work will not be accepted for course credit so please plan to have it submitted well before the scheduled deadline. I am happy to discuss any of your grades with you, and if I have made a mistake I will immediately correct it. Any formal grade disputes must be submitted in writing and within one week of receiving the grade.

Learning Assessments	#	Points Each	Category Total	Category Weight
<b>Participation</b>	14	5	5	5%
<b>Homework:</b> assignments submitted on ELMS	5	9	45	45%
<b>Midterm (LC):</b> in-class exam	1	30	20	30%
<b>Group Project:</b> hand-on demonstrations (4 parts)	1	20	30	20%
<b>Total Points:</b>			<b>100</b>	

Final letter grades are assigned based on the percentage of total assessment points earned. To be fair to everyone I have to establish clear standards and apply them consistently, so please understand that being close to a cutoff is not the same this as making the cut ( $89.99 \neq 90.00$ ). It would be unethical to make exceptions for some and not others.

Final Grade Cutoffs					
+	97.00%	+	87.00%	+	77.00%
A	94.00%	B	84.00%	C	74.00%
-	90.00%	-	80.00%	-	70.00%
				D	64.00%
				F	<60.0%
					60.00%

(see last page for sample course schedule)

## Course Schedule

**OS** = OpenIntro Statistics, 3rd Edition    **HW** = Home Work  
**DL** = DataCamp Lab (self-paced)        **PR** = Project

	ASSIGNMENTS	DURING OUR CLASS MEETING	READINGS & LABS
<b>WEEK 1</b> Wed 8/29		Course overview Introduction to Data	OS-1.1 OS-1.2 OS-1.3 OS-2 (refresh) L-1
<b>WEEK 2</b> Wed 9/5		Introduction to Data (cont.)	OS-1.4 OS-1.5 OS-1.6 OS-1.7 L2
<b>WEEK 3</b> Wed 9/12	<b>HW1:</b> due on Tues 9/11 at 10pm	Introduction to Data (cont.) Distributions	OS-1.8 OS-3.1 OS-3.2 OS-3.4 OS-3.5 L3
<b>WEEK 4</b> Wed 9/19		Foundations for Inference	OS-4.1 OS-4.2 OS-4.4 L4
<b>WEEK 5</b> Wed 9/26	<b>HW2:</b> due on Tues 9/25 at 10pm	Foundations for Inference (cont.)	OS-4.3 OS-4.5 L5
<b>WEEK 6</b> Wed 10/3	<b>PR-Proposal:</b> due on Tues 10/2 at 10pm	Inference for Numerical Data	OS-5.1 OS-5.2 OS-5.3 L6
<b>WEEK 7</b> Wed 10/10	<b>HW3:</b> due on Tues 9/18 at 10pm	Inference for Numerical Data (cont.)	OS-5.4 OS-5.5 L6
<b>WEEK 8</b> Wed 10/17	MIDTERM		

<b>WEEK 9</b> Wed 10/24		<b>Inference for Categorical Data</b>	<b>OS-6.1 OS-6.2 OS-6.3 OS-6.4 L7</b>
<b>WEEK 10</b> Wed 10/31	<b>PR-Data Collection:</b> due on Tues 10/30 at 10pm	<b>Introduction to Linear Regression</b>	<b>OS-7.1 OS-7.2 L8</b>
<b>WEEK 11</b> Wed 11/7	<b>HW4:</b> due on Tues 11/6 at 10pm	<b>Introduction to Linear Regression (cont.)</b>	<b>OS-7.3 OS-7.4 L8</b>
<b>WEEK 12</b> Wed 11/14	<b>PR-Analysis:</b> due on Tues 11/13 at 10pm	<b>Multiple Regression</b>	<b>OS-8.1 OS-8.2 OS-8.3 L9</b>
<b>WEEK 13</b> Wed 11/28	<b>HW5:</b> due on Tues 11/27	<b>Logistic Regression</b>	<b>OS-8.4 L9</b>
<b>WEEK 14</b> Wed 12/5	<b>FINAL PROJECT PRESENTATION</b>		
<b>WEEK 15</b> Wed 12/12	<b>PR-Final Report:</b> due on Tues 12/11 at 10pm		

**Note:** This is a tentative schedule, and subject to change as necessary – monitor the course ELMS page for current deadlines. In the unlikely event of a prolonged university closing, or an extended absence from the university, adjustments to the course schedule, deadlines, and assignments will be made based on the duration of the closing and the specific dates missed.