

Augusta University
MATH 3250 Syllabus

Course Title/Number	Introductory Statistics and Data Analysis; Section A; CRN 31039
Semester/Year	Spring 2022
Days/Time	MWF 10-10:50am
Location	HSC 2214
Instructor	Dr. Michael Otunuga
Office	GE 2018
E-Mail	ootunuga@augusta.edu
Office Hours	MWF 11:00AM-1:00PM; others by appointment. To make an appointment, email in advance when possible.
Phone	(706) 667-4477
Textbook	<ol style="list-style-type: none"> 1. <i>Understandable Statistics</i> by Brase and Brase (12th Edition) 2. OpenIntro Statistics by David Diez, Mine Cetinkaya-Rundel, Christopher Barr, It is open-source and you can download a free .pdf copy of the book at https://www.openintro.org/stat/textbook.php.
Calculator/Supply	<ol style="list-style-type: none"> 1. Calculator with a y^x (exponent) key 2. Laptop computer. Bring your laptop to class every Friday for R coding. You can also download the R app on your iPad 3. R statistical software
R software	Instruction on how to download the R statistical software is included on the last page.
R Textbook	We will be using the free online textbook "The Book of R." You can download a free copy here https://web.itu.edu.tr/~tokerem/The_Book_of_R.pdf
Prerequisites	MATH 2011 or MATH 2011H with at least a D grade
University Policies	<p>By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to https://www.augusta.edu/compliance/policyinfo/policies.php</p> <p>Cheating, plagiarism, collusion, and any form of academic misconduct are prohibited in this class. For detailed definition of these, see the full text by going to https://www.augusta.edu/compliance/policyinfo/policy/academic-honesty.pdf</p>
Disable Students	<p>Policy for Students with Disabilities: Augusta University believes academically qualified individuals with disabilities should have equal opportunity and access to a quality education. If any person with a disability has difficulty accessing an area on campus, please report these concerns using the <u>ADA Concern Form</u> or <u>ADAFacilities@augusta.edu</u>. If you have a disability request, I suggest that you visit the Testing & Disability Services center at https://www.augusta.edu/tds/</p>

Course Description: From Catalog

This course interweaves traditional topics in statistics with elements of data analysis using popular statistical software packages. Topics include descriptive statistics, probability distributions, sampling distributions, statistical inference for means and proportions, categorical analysis, and simple regression, including multiple and non-linear regression. Elementary programming in a statistics environment like R will be used to perform statistical analyses, make graphics, and perform simulations.

Course Requirement

Homework: Homework will be assigned in class every Friday and due the following Monday. The homework problems will test your skills on the content taught in class, including how to use R.

Project: Nine projects (each from Chapters 1-9) will be assigned. Each of the project must be completed using R. The class will be divided into four to five groups for collaboration purpose. Details will be discussed in class.

Exams: There will be 2 tests during the semester on **January 31**, and **March 11**. Make-up exams will only be given in the event of a university-excused absence. Inform me on time.

Final Exam: The final exam will be on **Thursday May 5, 2022, from 11:00AM-1:00PM**. Please make travel arrangements accordingly. Make-up/early tests will not be available to accommodate individual travel plans.

Grading Policy

Homework	100pts
Two major exams	200pts
Project	200pts
Final (comprehensive) exam	150pts

The grading scale is rigid.

90.00 – 100	A
80.00 – 89.99	B
70.00 – 79.99	C
60.00 – 69.99	D
Below 60.00	F

		Tentative Schedule
<u>Week</u>	<u>Dates</u>	Approximate schedule: Sections covered and topics
1	01/06-01/07	1.1: What is Statistics? 1.2: Random Samples Project on Section 1 assigned
2	01/10-01/14	1.3: Introduction to Experimental Design 2.2: Bar Graphs, Circle Graphs, and Time-Series Graphs 2.1: Frequency Distributions, Histograms R lab on Sections 1 and 2 Project on Section 2 assigned
3	01/17-01/21	Martin Luther King, Jr Holiday 01/17/2022 3.1: Measures of Central Tendency: Mode, Median, and Mean 3.2: Measures of Variation R lab
4	01/24-01/28	3.3: Percentiles and Box-and-Whiskers Plots R Lab Project on Section 3 assigned Review Exam 1
5	01/31-02/04	Exam 1 on Monday, 01/31/22: Exam will cover Sections 1-3 4.1: What is Probability? 4.2: Some Probability Rules R lab
6	02/07-02/11	4.3: Trees and Counting Techniques 5.1: Introduction to Random Variables and Probability Distributions R lab Project on Section 4 assigned
7	02/14-02/18	5.2: Binomial Probabilities 5.3: Additional Properties of the Binomial Distribution R lab Project on Section 5 assigned
8	02/21-02/25	6.1: Graphs of Normal Probability Dist 6.2: Areas Under the Standard Normal R lab
9	02/28-03/04	6.3: Areas Under Any Normal Curve 6.4 Sampling Distributions R lab
10	03/07-03/11	6.5: The Central Limit Theorem 6.6: Normal Approx to Binomial Distribution and to \hat{p} Exam 2 on Friday, 03/11/22: Exam will cover Sections 4, 5, and 6 R lab Project on Section 6 assigned
11	03/14-03/18	7.1: Estimating μ When σ is Known 7.2: Estimating μ When σ is unknown
12	03/21-03/25	7.3: Estimating p in the Binomial Distribution 7.4: Estimating $\mu_1 - \mu_2$ and $p_1 - p_2$ R lab Project on Section 7 assigned
13	03/28-04/01	8.1: Introduction to Statistical Tests

		8.2: Testing the Mean μ R lab
14	04/04-04/08	Spring Break
15	04/11-04/15	8.3: Testing a Proportion p 8.5: Testing $\mu_1 - \mu_2$ and $p_1 - p_2$ (Independent samples) R lab Project on Section 8 assigned
16	04/18-04/22	9.1: Scatter Diagrams and Linear Correlation 9.2: Linear Regression and the Coefficient of Determination R lab
17	04/25-04/29	9.4: Multiple Regression R lab Project on Section 9 assigned Review of Final Exam Final Exam: Thursday May 5, 2022 from 11:00AM-1:00PM

How to install and use R

The R software is a free software that can be downloaded online. Links to the R package are given below:

Install R:

1. Go to <https://www.r-project.org/>
2. In the “Getting Started”, click “**to download**” in the link.
3. Under “CRAN mirrors”, choose one of the URLs from the United States
4. Under “The Comprehensive R Archive Network”, click on the version you want
Note: Read the instructions under the “Latest release” to see which version is best for your computer system.
5. For MAC users, also install **XQuartz** (see the Latest release section for more information) in addition to installing R because it is no longer part of OS X.

Extra installation

6. Start R, and at the > command prompt, type the command `install.packages("Rcmdr")`
7. Once it is installed, to load the **Rcmdr** package, just enter the command `library(Rcmdr)`

More information can be found here:

<https://socialsciences.mcmaster.ca/jfox/Misc/Rcmdr/installation-notes.html>

Download RStudio:

1. Go to <https://rstudio.com/products/rstudio/download/>
2. Choose the “RStudio Desktop” version (this should be free) and follow the installation instructions.
3. Note that RStudio requires a 64-bit operating system. For a 32-bit system, download [old version of RStudio](#).

On your iPad

For those with an iPad, you can download the R-app named “R Programming Compiler” on the app store.



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