

**ISM4542.001  
Statistical Programming  
For Business Analytics  
Fall, 2025**



Instructor: Dr. Ronald K. Satterfield  
Office: CIS 2054  
Office Hours: Regular hours for the professor and GAs will be announced via Canvas.  
All office hours will be held via Microsoft Teams.  
E-mail: rsatterf@usf.edu (The Canvas email function is cumbersome. Please email your professor directly at this address rather than going through Canvas.)

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## **Course Description**

This course will enhance your background in fundamental statistics and introduce you to statistical programming in R. We will begin with a review of basic concepts, measures of central tendency and dispersion, and probability distributions. Afterward the course will concentrate on confidence intervals, hypothesis tests, regression, correlation, logistic regression, analysis of variance, and fundamentals of mathematical optimization. The emphasis will be on applications, concepts and interpretation of results, rather than derivations and calculations.

This course is offered on a blended-model basis. For most weekly sessions students will be asked to view an introductory lecture video on the week's topic prior to the live class session. Live sessions will assume students are familiar with the video and will concentrate on 1) the use of software to conduct statistical analyses, and 2) completion of individual in-class assignments. Full instructions for completing assignments will be given in class.

## **Textbooks**

Basic Statistics: An Introduction with R, Tenko Raykov and George A. Marcoulides, Rowman & Littlefield Publishers, Inc., 2012.

A First Course in Statistical Programming with R, W. John Braun and Duncan J. Murdoch, Cambridge University Press, 2011. This book is one of two selected for this course to serve as a good general reference for R and R programming. As experience with R and general programming will be varied within the group use of this resource is left to students' judgment.

Beginning R: The Statistical Programming Language, Mark Gardener, John Wiley and Sons, 2012. This book is one of two selected for this course to serve as a good general reference for R and R programming. As experience with R and general programming will be varied within the group use of this resource is left to students' judgment.

Electronic versions of these books are available at no cost to USF students via:

<http://ezproxy.lib.usf.edu/login?url=http://ebookcentral.proquest.com/lib/usf/detail.action?docID=1076196>

<http://ezproxy.lib.usf.edu/login?url=https://doi.org/10.1017/CBO9781316451090>

<http://ezproxy.lib.usf.edu/login?url=http://ebookcentral.proquest.com/lib/usf/detail.action?docID=836575>

## Software

We will be primarily using R with R Studio in this course. Some supplemental work will be done with Microsoft Excel. The complete MS-Office suite is available to all USF students free of charge to install on their own machines. For any technical assistance you need in gaining access to MS-Office call USF Tech Support at 974-1222. R and R Studio are both available as free downloads. Install R first from [www.r-project.org](http://www.r-project.org), then install R Studio from [www.rstudio.com](http://www.rstudio.com). There are numerous online sites that can give assistance if needed with these tasks. Some add-in packages for R will also be used. This line of R code will install the packages you need for this course.

```
install.packages(c("car", "Hmisc", "rio", "moments", "corrplot",  
"MASS", "ppcor", "stargazer"),dep=TRUE)
```

Please be prepared at our initial class meeting to use R and R Studio. This means you should have the software installed and ready for use before class.

## Outside Materials for Use in Studying

Numerous materials are available online to help students learn general statistics as well as R programming. For students who feel they need additional assistance with course topics beyond that given in class these materials can be quite useful. One excellent resource is a series of R Studio tutorial videos available on YouTube and created by [Michael Marin](http://www.youtube.com/user/marinstatlectures) of the University of British Columbia. There are many videos in this set and they can be found at: <https://www.youtube.com/user/marinstatlectures>.

## Learning Outcomes

Upon completion of the course students will demonstrate the ability to:

1. Understand difference between inferential and descriptive statistics.
2. Use R to build simple graphics and be able to interpret those graphics.
3. Use R to apply basic inferential tools to data, such as confidence intervals, hypothesis test, regressions, and other associated analyses.
4. Interpret a confidence interval.
5. Formulate and interpret results from a simple hypothesis test.
6. Set up and evaluate results of a regression analysis.
7. Estimate the influence of factors in an analysis of variance.
8. Predict the probability of an event after conducting a logistic regression analysis.
9. Build a simple mathematical programming model for a business case.

## Course Assignments

Ten assignments are planned in this course emphasizing the statistical and R programming aspects of the material. Each assignment will be worth 50 points. The assignments are to be completed individually with no consultation from other students. Any collaboration with current or former students will be considered an act of academic misconduct and will be dealt with accordingly. Please see the Academic Integrity and Honorlock in Assignments sections of this syllabus.

Most assignments will be completed during time set aside in class and the deliverables uploaded to Canvas prior to the designated due time. Assignments turned in late to Canvas will be assessed a penalty of ten points per half-hour late or portion thereof. For example, if a student turns in an assignment 45 minutes late they will suffer a 20-point penalty. This penalty will be assessed separately from normal deductions of points for failure to do the assignment correctly. Times of assignment uploads are recorded by Canvas and reported to the professor. **There are no opportunities to make-up assignments missed, and no opportunities to redo assignments.**

The lowest score a student receives among the ten assignments will be excluded from calculation of the student's final grade.

### **Assignment Consultations with the Professor**

Should you wish to discuss the grading and points awarded for any assignment or online quiz your professor is happy to accommodate you. **However, you must do so within two weeks of the graded work being made available to you via Canvas.** If you do not discuss such with your professor within the two-week window the professor will assume you are satisfied with the grading of the assignment and will consider the points awarded to be final. After the two-week window no discussions of points awarded on an assignment will be entertained.

### **Honorlock in Assignments**

All students must review the syllabus and the requirements, including the online terms and video testing requirements, to determine if they wish to remain in the course. Enrollment in the course is an agreement to abide by and accept all terms. Any student may elect to drop or withdraw from this course before the end of the drop/add period on **Friday, August 29, 2025.**

Online assignments and quizzes within this course require online proctoring. Therefore, students will be required to have a webcam (USB or internal) with a microphone when taking an exam or quiz. Students understand that this remote recording device is purchased and controlled by the student and that recordings from any private residence must be done with the permission of any person residing in the residence.

To avoid any concerns in this regard, students should select private spaces for the testing. Students with concerns may discuss location of an appropriate space for the recordings with their instructor or advisor.

Students must ensure that any recordings do not invade any third-party privacy rights and accept all responsibility and liability for violations of any third-party privacy concerns.

Students are strictly responsible for ensuring that they take all exams using a reliable computer and high-speed internet connection. Setup information will be provided prior to taking the proctored exam. To use Honorlock, students are required to download and install the [Honorlock Google Chrome extension](#). For additional information please visit the [USF online proctoring student FAQ](#) and [Honorlock student resources](#).

Honorlock is a facility used across USF to insure security and fairness in online exercises. We use Honorlock in this course for our course assignments and online quizzes. On our course Canvas site is a specialized module developed by USF to teach you how to use Honorlock, help you install all needed parts of Honorlock on your computer, and test Honorlock's functioning. **It is your responsibility to make sure you have Honorlock properly working on your computer before each assignment.** Honorlock can be tested at any time by taking the Honorlock Practice Quiz always available to you on Canvas. Should you have difficulty there are tech support facilities open to you, provided by USF and Honorlock. Whether you complete assignments and quizzes in our classroom or elsewhere, you must use Honorlock to record **the entire duration of your work** in completing the exercise. The overriding policy is **"no Honorlock, no points"**. There are other requirements involving Honorlock, academic integrity, and our exercises. These are:

1. You must have a webcam on all our assignments and online quizzes. Your webcam will be recorded as will your computer screen and your browsing activity.
2. Your webcam must be positioned to show your face completely.
3. Lighting in your location must be sufficient to recognize your face. Backlighting should be minimal.
4. Only one monitor may be used.
5. Only one device may be used.
6. You should complete your work in a place where you have a reasonable expectation of being alone.
7. Conversation or communication with any other person while completing your work will be considered collaboration and an act of academic misconduct. This includes verbal, non-verbal, and electronic communication.
8. Soliciting, receiving, or providing assistance by any means while completing the assignment or online quiz will be considered an act of academic misconduct. This includes but is not limited to coding advice, code chunks, script files, analysis output, and interpretations of analysis results.
9. Using code from prior student assignments will be considered an act of academic misconduct.
10. Submitting as your own any work done by others will be considered an act of academic misconduct.

Artificial Intelligence (AI) may not be used in the completion of any assignment. **Honorlock will be set to prohibit web browsing to any external site.**

Further, as Honorlock monitors only one device in use to complete an assignment, **the simultaneous use of other devices in completing an assignment is prohibited.**

Also, students are reminded that webcam videos are recorded and are accessible at any time by the professor and his designees as well as other technical staff of USF and Honorlock. Professional deportment is recommended while recordings are being made.

## Grade Determination

This is planned as a 450-point course (50\*[10-1]). Letter grades will be awarded according to the percentage scale below.

Letter Grade	Percent Score
A	93% - 100%
A-	90% - 93%
B+	87% - 90%
B	83% - 87%
B-	80% - 83%
C+	77% - 80%
C	73% - 77%
C-	70% - 73%
D+	67% - 70%
D	63% - 67%
D-	60% - 63%
F	Below 60%

## Course Policies

### Attendance Quiz

To meet USF's First Day Attendance requirement a short one-question attendance quiz has been set up in Canvas. Please complete the quiz before **Thursday, August 28, 2025 at 11:59 PM**. If you do not complete the quiz, or if you answer "no" to the single question, you will be administratively dropped from our course.

### Extra Credit Policy

There are no opportunities for extra credit in this course. Students' focus should be on the primary course work.

### Medical Issues

There are certainly cases in which a student legitimately cannot complete course assignments for valid medical reasons. To be excused from course work in such cases requires students to furnish a standard note from a health care professional stating care is being sought for an ailment or condition which can impede a student's ability to complete course work. Without such a note an excuse from course work cannot be granted.

### Grades of "Incomplete"

An Incomplete grade ("I") is exceptional and granted at the instructor's discretion only when students are unable to complete course requirements due to illness or other circumstances beyond their control. The course instructor and student must complete and sign the "I" Grade Contract Form that describes the work to be completed, the date it is due, and the grade the student would earn factoring in a zero for all incomplete assignments. The due date can be negotiated and extended by student/instructor as long as it does not exceed two semesters for undergraduate courses and one semester for graduate courses from the original date grades were due for that course. An "I" grade not

cleared within the two semesters for undergraduate courses and one semester for graduate courses (including summer semester) will revert to the grade noted on the contract.

### **Email**

The primary means of communication between instructor and students between live class meetings will be email. “Blast emails” will occasionally be sent by the instructor to all students via Canvas. Students can feel free to email their instructor with questions at any time. Please anticipate a response time of 24 hours to email queries.

### **Canvas**

Canvas will be used in this course to disseminate materials turn in weekly assignments and return graded assignments. If you need help learning how to perform various tasks related to this or other courses in Canvas, please consult the Canvas help guides. You may also contact USF's IT support at (813) 974-1222 or [help@usf.edu](mailto:help@usf.edu).

### **Laptop Usage**

Laptop usage is highly encouraged in this course given the nature of the material. Students are responsible for making certain their technology is appropriate to the needs of our degree program and is in good working order for class lectures and assignments. Excuses of system crashes and “blue screen errors” **will not be accepted** in cases of incomplete or late course assignments or quizzes.

### **Phone Usage**

Students attending the in-person lectures are asked to place their mobile phones on “silent” and to step outside the classroom to take any important calls. Phones may not be used during in-class assignments.

### **Academic Integrity and Academic Misconduct**

Academic integrity is the foundation of the University of South Florida System’s commitment to the academic honesty and personal integrity of its university community. Academic integrity is grounded in certain fundamental values, which include honesty, respect, and fairness. Broadly defined, academic honesty is the completion of all academic endeavors and claims of scholarly knowledge as representative of one’s own efforts. The final decision on an academic integrity violation and related academic sanction at any USF System institution shall affect and be applied to the academic status of the student throughout the USF System, unless otherwise determined by the independently accredited institution. The process for faculty reporting of academic misconduct, as well as the student’s options for appeal, are outlined in detail in [USF System Regulation 3.027](#).

### **Web Posting Course Materials**

Students are reminded that course materials are copyrighted. The posting of course materials to third-party sites such as Course Hero represents a violation of the professor’s copyright on those materials and constitutes theft of intellectual property.

### **Disruption to Academic Process**

Disruptive students in the academic setting hinder the educational process. Disruption of the academic process is defined as the act, words, or general conduct of a student in a classroom or other academic environment which in the reasonable estimation of the

instructor: (a) directs attention away from the academic matters at hand, such as noisy distractions, persistent, disrespectful or abusive interruption of lecture, exam, academic discussion, or general University operations, or (b) presents a danger to the health, safety, or well-being of self or other persons.

### **Student Academic Grievance Procedures**

The purpose of these procedures is to provide all undergraduate and graduate students taking courses within the University of South Florida System an opportunity for objective review of facts and events pertinent to the cause of the academic grievance. An “academic grievance” is a claim that a specific academic decision or action that affects that student’s academic record or status has violated published policies and procedures or has been applied to the grievant in a manner different from that used for other students.

### **Disability Access**

Students with disabilities are responsible for registering with Student Accessibility Services (SAS) to receive academic accommodations. SAS encourages students to notify instructors of accommodation requests at least 5 business days prior to needing the accommodation. A letter from SAS must accompany this request.

### **Sexual Misconduct/Sexual Harassment Reporting**

USF is committed to providing an environment free from sex discrimination, including sexual harassment and sexual violence ([USF System Policy 0-004](#)). The USF Center for Victim Advocacy and Violence Prevention is a confidential resource where you can talk about incidents of sexual harassment and gender-based crimes including sexual assault, stalking, and domestic/relationship violence. This confidential resource can help you without having to report your situation to either the Office of Student Rights and Responsibilities (OSSR) or the Office of Diversity, Inclusion, and Equal Opportunity (DIEO), unless you request that they make a report. Please be aware that in compliance with Title IX and under the USF System Policy, educators must report incidents of sexual harassment and gender-based crimes including sexual assault, stalking, and domestic/relationship violence. If you disclose any of these situations in class, in papers, or to me personally, Your professor is required to report it to OSSR or DIEO for investigation. Contact the USF Center for Victim Advocacy and Violence Prevention: (813) 974-5757.

### **Attendance Policy**

Students are expected to exhibit professionalism through regular and on-time attendance to class lectures, whether those lectures are offered live or online.

### **Religious Observances**

All students have a right to expect that the University will reasonably accommodate their religious observances, practices and beliefs. If you observe religious holidays, you should plan your allowed absences to include those dates.

## Material Coverage and Schedule

Date	Lecture Topic/Activity	Video Open Date	Support Materials
8/26/25	Intro to Statistics and R	8/19/25	Raykov & Marcoulides: Chapters 1, 2, and 3 McGibney, Chapters 1 and 2
8/28/25	Intro to Statistics and R		
9/2/25	Assignment 1		
9/4/25	Probability Distributions Central Limit Theorem	9/2/25	Raykov & Marcoulides: Chapters 5 and 6
9/9/25	Probability Distributions Central Limit Theorem		
9/11/25	Assignment 2		
9/16/25	Confidence Intervals and Hypothesis Tests	9/11/25	
9/18/25	Confidence Intervals and Hypothesis Tests		
9/23/25	Assignment 3		
9/25/25	Simple Regression	9/23/25	Raykov & Marcoulides: Chapters 11 and 12 McGibney, Chapters 3 and 4
9/30/25	Simple Regression		
10/2/25	Simple Regression		
10/7/25	Assignment 4		
10/9/25	Multiple Regression	10/16/25	Raykov & Marcoulides: Chapter 13 McGibney, Chapters 5 and 6
10/14/25	Multiple Regression		
10/16/25	Assignment 5		
10/21/25	Multiple Regression		Raykov & Marcoulides: Chapter 13 McGibney, Chapters 7, 8, and 9
10/23/25	Multiple Regression		
10/28/25	Assignment 6		
10/30/25	Time Series Regression		None <sup>1</sup>
11/4/25	Assignment 7		
11/6/25	Logistic Regression		None <sup>1</sup>
11/11/25	Veteran's Day		
11/13/25	Assignment 8		
11/18/25	Analysis of Variance	11/6/25	Lindman, Chapters 2 and 3

11/20/25	Analysis of Variance		
11/25/25	Assignment 9		
11/27/25	Thanksgiving Day		
12/2/25	Math Optimization	11/25/25	None <sup>1</sup>
12/4/25	Math Optimization <sup>2</sup>		

<sup>1</sup>Materials presented in class and via Canvas are the primary sources for this topic.

<sup>2</sup>The assignment for this topic will be due very shortly after the end of the course.