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|  | STA2023H.0203: Honors Statistical Methods I*Department of Statistics and Data Science, College of Sciences*Credit Hours: 3 |

# Course Syllabus

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| Instructor: | Nathaniel Simone  | Term: | Fall 2023 |
| Office Location: | Technology Commons II (TC2) 211B | Class Meeting Days: | Tuesday/Thursday |
| Office Hours: | 3:00pm – 5:00pm Tuesday/Thursday | Class Meeting Time: | 1:30pm-2:50pm |
| Phone: | Department Phone Number:(407) 823-2289 | Class Location: | BA1 225 |
| Email: | nathaniel.simone@ucf.edu (include STA2023H in subject line)  | Course Modality: | Face to Face (P) |
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## Course Description

Undergraduate Catalog Description: First methods course introducing probability and statistical inference, including estimation, hypothesis testing, binomial and normal distributions, sample size. With honors-level content.

This is a first course in statistical methods. Students will learn the basics of descriptive statistics, including numerical and visual summaries of data. Probability calculations and different strategies to calculate various probabilities will be taught, including tree diagrams, Venn diagrams, counting rules, and tables. Different discrete and continuous distributions, such as the binomial and normal distribution, will be used for probability calculations. This extends to sampling distributions and the Central Limit Theorem. The Central Limit Theorem is then applied to real world examples, including estimating population means and proportions. Hypothesis testing and confidence intervals for means and proportions will be interpreted. Finally, correlation and simple linear regression will be explored: the strength of the linear relationship between two continuous variables.

Additional topics will include additional discrete and continuous distributions, as well as some basic categorical data analysis if time is available.

## Student Learning Outcomes

By the end of this course, students will be able to demonstrate across homework assignments, quizzes, and exams:

* Create and describe ways to summarize data, both numerically and visually.
* Calculate probabilities using various techniques.
* Understand the difference between discrete and continuous variables, as well as using them to calculate probabilities.
* Describe the Central Limit Theorem and its importance to statistics.
* Create and interpret confidence intervals for means and proportions.
* Conduct hypothesis tests and interpret the results.
* Determine the linear relationship between two continuous variables.
* Understand statistical terms and how statistics may be used and misused in the real world.

## Enrollment Requirements

Prerequisite: MGF 1106 or any MAC course. Consent of Honors. Calculus is desired as it may be used to explain certain concepts, but it will not be required. It may be used in bonus questions or extra credit, however.

## Assessment and Grading Procedures

### Grading Methods

The following grading scheme will be used to convert the overall course percentage to a letter grade. Final grades are rounded to two decimal places that compared to the scheme below.

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| A | A- | B+ | B | B- | C+ | C | D | F |
| >90% | >88%-90% | >86%-88% | >80%-86% | >78%-80% | >76%-78% | >70%-76% | >60%-70% | <60% |

The overall grade will be made up of the following:

|  |  |  |
| --- | --- | --- |
| **Category** | **Description** | **Weight** |
| Homework/Participation | * Homework will be assigned after every class. For certain problems, a student may volunteer to present or write out their solution for the next class.
* Regardless of the accuracy of the answer, the person who presented or wrote-out the answer will receive 1 point.
* To receive full credit, 6 points are required (this is subject to change depending on the number of questions asked during the semester).
 | 20% |
| Quizzes | * May an announced or unannounced.
* Completely open note, but unless otherwise noted, no collaboration is allowed.
* Tentatively, 5 will be given.
* Lowest score will be dropped.
 | 20% |
| Exams | * Two Exams total. One exam covering Chapters 1-5, one covering Chapters 6-9.
	+ Graded 100% for accuracy.
	+ One single sheet of paper (standard sized printer paper, 8.5” x 11” or smaller), front and back, handwritten only, may be brought to each exam. No access to the internet, the textbook, or other notes are allowed. No collaboration with others is permitted.
	+ If statistical tables are needed, the instructor will provide them.
	+ In general, please arrive at least 5 minutes early so that everyone can receive the full time allotted for the exam.
	+ Cell phones should be turned off and out of sight (in a backpack, purse, bag, etc.). Nothing should be on the desk other than the exam, note sheet, writing utensil, and a calculator.
	+ A TI-84 calculator or below is allowed. All other calculators are subject to approval by the instructor.
 | 40% |
| Final Project | * Projects will be done individually.
* More details will be provided later, but students will find a data source and use software to conduct descriptive statistics and inferential statistics.
* Collaboration is allowed, but each student should produce their own work.
* Will consist of 3 parts: Project Checkpoint (5%), Project Report (10%), and Project Presentation (5%).
	+ Project checkpoint will involve students finding their data and providing the description of the dataset and the goal of the overall analysis.
	+ Project report will be a short report (3-6 pages) describing the results of the analysis.
	+ Students will summarize their results in a short presentation (5 minutes) during the final exam period.
 | 20% |

Academic Integrity/Breaking of Rules

* Quizzes
	+ If you are caught breaking any of the rules above, some potential consequences (depending on the severity of the situation) could be:
		- Receiving an un-droppable 0 for the quiz.
		- Receiving a 0% for the entire quiz weight.
		- Getting reported to the Office of Student Conduct and Academic Integrity.
* Exams
	+ If you are caught breaking any of the rules above, some potential consequences (depending on the severity of the situation) could be:
		- Receiving a 0 for the exam.
		- Receiving an F for the class.
		- Getting reported to the Office of Student Conduct and Academic Integrity.
* Project
	+ If you are caught breaking any of the rules above, some potential consequences (depending on the severity of the situation) could be:
		- Receiving a 0 for the entire project.
		- Receiving an F for the class.
		- Getting reported to the Office of Student Conduct and Academic Integrity.

### Missing a Quiz/Exam

If you are expected to miss a class, please let me know as soon as possible. Since quizzes may be unannounced, please indicate to me via email (or Webcourses) if you plan on missing a class at least 24 hours in advance, unless the emergency happens within 24 hours of the class.

* A documented excuse allows the student to make-up a quiz/exam, provided the documentation is provided in a timely manner.
* It is up to the discretion of the instructor whether an unexcused absence can be used to make up a quiz or exam.

The following constitutes an excused absence:

* Illness
* Family Emergency (death of an immediate family member)
* Personal Emergency (such as a car accident)
* Religious Observance (see below)
* Military Obligations
* University Activities (see below)
* Severe Weather Conditions

If a student has an excused absence or an accepted unexcused absence, the quiz or exam may be made-up.

### Attendance/Participation

Students are expected to come to every class with the homework done. Activities will be done in class, and students should participate in these activities.

### Important Dates

* Add/Drop/Swap Deadline – August 25th
* Labor Day (No classes) – September 4th
* Withdrawal Deadline – October 27th
* Thanksgiving Week (No classes) – November 22nd – 24th

### Pacing Schedule

A pacing schedule will be uploaded to webcourses.

### Extra Credit

Both exams may have bonus questions, meaning that higher than a 100% may be earned on each exam.

### Regrades

Any regrades or grade complaints must be made within 48 hours of receiving the feedback. Quiz and exam feedback will be handed out in-class. Homework feedback will be posted online. If this request is not made within 48 hours, then that grade will be treated as final and cannot be changed.

### Communication

While I usually respond faster, please allow a minimum of 1 business day (Monday-Friday, 9am-5pm) for a response via email. Communication outside that timeframe is likely, though not guaranteed.

### Grade Dissemination

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To comply with the Family Educational Rights and Privacy Act (FERPA), grades must not be released to third parties, which includes posting grades by name, SSN, or UCFID. This section can indicate how you will return graded assignments to the individual student. To ensure students have prompt feedback, and knowledge of their progress, faculty members must record all grades in Webcourses@UCF and follow student data classification and security standards.

## Course Materials and Resources

We will not be using MyLab for homework. However, you can receive the ebook using the instructions below to get the textbook for $69.99, as well as access to practice problems and exams. Homework will involve problems from the textbook, and the textbook can be rented for one semester for less than $69.99. (Note: if you plan on taking Statistical Methods II, that course will use the same textbook).

## MyLab Access

* MyLab Homework and Chapter Quizzes
	+ Homework and chapter quizzes will be administered through MyLab. The registration process is briefly described below. You can always access MyLab through the “Modules” tab on Canvas.
* Registration
	+ Go into the course on Canvas. In the left column, select Course Materials.
	+ Select “University of Central Florida” if prompted for a campus.
	+ Select “Opt-In” to opt-in to buying MyLab and the e-book that goes along with the course.
		- If you opt-in before Sunday, August 27th, 2023, you can access the course materials for a discounted price of $69.99. The fee is billed to your student account.
		- You can then use the “modules” tab to get access MyLab.
	+ If you do not opt in before the deadline, or if you do not want to be billed to your student account, you cannot get the discount. You can do this through <https://ucf.bncollege.com/shop/ucf/page/find-textbooks>. This will be at an increased price if you choose to go this route, so it is not recommended.

## Policy Statements

This section should include the required core policy statements and any policies that relate to your course. The standardized core policies are included below. Common additional policy statements are available on the [Faculty Center website](https://fctl.ucf.edu/teaching-resources/course-design/syllabus-statements/) for verbatim use or modification.

**Academic Integrity**

Students should familiarize themselves with UCF’s Rules of Conduct at <https://scai.sdes.ucf.edu/student-rules-of-conduct/>. According to Section 1, “Academic Misconduct,” students are prohibited from engaging in

1. Unauthorized assistance: Using or attempting to use unauthorized materials, information or study aids in any academic exercise unless specifically authorized by the instructor of record. The unauthorized possession of examination or course-related material also constitutes cheating.
2. Communication to another through written, visual, electronic, or oral means: The presentation of material which has not been studied or learned, but rather was obtained through someone else’s efforts and used as part of an examination, course assignment, or project.
3. Commercial Use of Academic Material: Selling of course material to another person, student, and/or uploading course material to a third-party vendor without authorization or without the express written permission of the university and the instructor. Course materials include but are not limited to class notes, Instructor’s PowerPoints, course syllabi, tests, quizzes, labs, instruction sheets, homework, study guides, handouts, etc.
4. Falsifying or misrepresenting the student’s own academic work.
5. Plagiarism: Using or appropriating another’s work without any indication of the source, thereby attempting to convey the impression that such work is the student’s own.
6. Multiple Submissions: Submitting the same academic work for credit more than once without the express written permission of the instructor.
7. Helping another violate academic behavior standards.
8. Soliciting assistance with academic coursework and/or degree requirements.

**Responses to Academic Dishonesty, Plagiarism, or Cheating**

Students should also familiarize themselves with the procedures for academic misconduct in UCF’s student handbook, The Golden Rule <https://goldenrule.sdes.ucf.edu/>. UCF faculty members have a responsibility for students’ education and the value of a UCF degree, and so seek to prevent unethical behavior and respond to academic misconduct when necessary. Penalties for violating rules, policies, and instructions within this course can range from a zero on the exercise to an “F” letter grade in the course. In addition, an Academic Misconduct report could be filed with the Office of Student Conduct, which could lead to disciplinary warning, disciplinary probation, or deferred suspension or separation from the University through suspension, dismissal, or expulsion with the addition of a “Z” designation on one’s transcript.

Being found in violation of academic conduct standards could result in a student having to disclose such behavior on a graduate school application, being removed from a leadership position within a student organization, the recipient of scholarships, participation in University activities such as study abroad, internships, etc.

Let’s avoid all of this by demonstrating values of honesty, trust, and integrity. No grade is worth compromising your integrity and moving your moral compass. Stay true to doing the right thing: take the zero, not a shortcut.

**Course Accessibility Statement**

The University of Central Florida is committed to providing access and inclusion for all persons with disabilities. Students with disabilities who need access to course content due to course design limitations should contact the professor as soon as possible. Students should also connect with Student Accessibility Services (SAS) <http://sas.sdes.ucf.edu/> (Ferrell Commons 185, sas@ucf.edu, phone 407-823-2371). For students connected with SAS, a Course Accessibility Letter may be created and sent to professors, which informs faculty of potential course access and accommodations that might be necessary and reasonable. Determining reasonable access and accommodations requires consideration of the course design, course learning objectives and the individual academic and course barriers experienced by the student. Further conversation with SAS, faculty and the student may be warranted to ensure an accessible course experience.

**Campus Safety Statement**

Emergencies on campus are rare, but if one should arise during class, everyone needs to work together. Students should be aware of their surroundings and familiar with some basic safety and security concepts.

* In case of an emergency, dial 911 for assistance.
* Every UCF classroom contains an emergency procedure guide posted on a wall near the door. Students should make a note of the guide’s physical location and review the online version at <https://centralflorida-prod.modolabs.net/student/safety/index>.
* Students should know the evacuation routes from each of their classrooms and have a plan for finding safety in case of an emergency.
* If there is a medical emergency during class, students may need to access a first-aid kit or AED (Automated External Defibrillator). To learn where those are located, see <https://ehs.ucf.edu/automated-external-defibrillator-aed-locations>.
* To stay informed about emergency situations, students can sign up to receive UCF text alerts by going to [www.getrave.com/login/ucf](http://www.getrave.com/login/ucf) and logging in. On the “My Account” tab, fill out the information, including e-mail address and cell phone number.
* Students with special needs related to emergency situations should speak with their instructors outside of class.
* To learn about how to manage an active-shooter situation on campus or elsewhere, consider viewing this video (<https://youtu.be/NIKYajEx4pk>).

**Campus Safety Statement for Students in Online-Only Courses (In case we need to pivot to online)**

Though most emergency situations are primarily relevant to courses that meet in person, such incidents can also impact online students, either when they are on or near campus to participate in other courses or activities or when their course work is affected by off-campus emergencies. The following policies apply to courses in online modalities.

* To stay informed about emergency situations, students can sign up to receive UCF text alerts by going to [www.getrave.com/login/ucf](http://www.getrave.com/login/ucf) and logging in. On the “My Account” tab, fill out the information, including e-mail address and cell phone number.
* Students with special needs related to emergency situations should speak with their instructors outside of class.

**Deployed Active Duty Military Students**

Students who are deployed active duty military and/or National Guard personnel and require accommodation should contact their instructors as soon as possible after the semester begins and/or after they receive notification of deployment to make related arrangements.

**Make-up Assignments for authorized university events or co-curricular activities**

Students who represent the university in an authorized event or activity (for example, student-athletes) and who are unable to meet a course deadline due to a conflict with that event must provide the instructor with documentation in advance to arrange a make-up. No penalty will be applied. For more information, see the UCF policy at <https://policies.ucf.edu/documents/4-401.pdf>

**Religious Observances**

Students must notify their instructor in advance if they intend to miss class for a religious observance. For more information, see the UCF policy at <http://regulations.ucf.edu/chapter5/documents/5.020ReligiousObservancesFINALJan19.pdf>.

**Title IX policy**

Title IX prohibits sex discrimination, including sexual misconduct, sexual violence, sexual harassment, and retaliation. If you or someone you know has been harassed or assaulted, you can find resources available to support the victim, including confidential resources and information concerning reporting options at <https://letsbeclear.ucf.edu> and <http://cares.sdes.ucf.edu/>.

**This syllabus is subject to change and all changes will be announced in class or through Webcourses.**