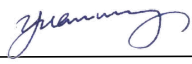

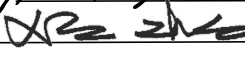
 <b>FLORIDA ATLANTIC UNIVERSITY</b>	<b>COURSE CHANGE REQUEST</b> <b>Graduate Programs</b>		UGPC Approval _____ UFS Approval _____ SCNS Submittal _____ Confirmed _____ Banner _____ Catalog _____
	<b>Department</b> Mathematics and Statistics  <b>College</b> College of Science		
<b>Current Course Prefix and Number</b> STA 6106		<b>Current Course Title</b> Statistical Computing	
Syllabus must be attached for <b>ANY</b> changes to current course details. See <a href="#">Template</a> . Please consult and list departments that may be affected by the changes; attach documentation.			
<b>Change title to:</b>  <b>Change prefix</b> <b>From:</b> <b>To:</b> <b>Change course number</b> <b>From:</b> <b>To:</b> <b>Change credits*</b> <b>From:</b> <b>To:</b> <b>Change grading</b> <b>From:</b> <b>To:</b> <b>Academic Service Learning (ASL) **</b> Add <input type="checkbox"/> Remove <input type="checkbox"/>		<b>Change description to:</b>  <b>Change prerequisites/minimum grades to:</b> permission of instructor  <b>Change corequisites to:</b>  <b>Change registration controls to:</b>  Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade.	
<b>Effective Term/Year for Changes:</b> Fall 2025		<b>Terminate course? Effective Term/Year for Termination:</b>	
<b>Faculty Contact/Email/Phone</b> Dr. Yang Li / yangli@fau.edu			
<b>Approved by</b> Department Chair  College Curriculum Chair  College Dean  UGPC Chair _____ UGC Chair _____ Graduate College Dean _____ UFS President _____ Provost _____		<b>Date</b> 1/17/2025 2/10/2025 2/10/2025 _____ _____ _____ _____ _____	

Email this form and syllabus to [UGPC@fau.edu](mailto:UGPC@fau.edu) 10 days before the UGPC meeting.

## Catalog Change

### **\* Statistical Computing (STA 6106) 3 credits**

Prerequisite: ~~STA.0009.or.equivalent.~~ Permission of Instructor

Algorithms in statistical computing: Random number generation, generating other distributions, random sampling and permutations. Matrix computations in linear models. Non-linear optimization with applications to statistical procedures. Other topics of current interest, such as issues of efficiency and use of graphics.



FLORIDA ATLANTIC UNIVERSITY

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**STA 6106-001 14779**

**Statistical Computing**

**Date:** XXXX

**Building:** YYY

**3 Credit(s)**

## Instructor Information

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**Instructor:** AAA

**Email:** zzz@fau.edu

**Office:** CCC

**Office Hours:** TBA

## Course Description

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Statistical Computing

Prerequisite: Permission of instructor

Algorithms in statistical computing: Random number generation, generating other distributions, random sampling and permutations. Matrix computations in linear models. Non-linear optimization with applications to statistical procedures. Other topics of current interest, such as issues of efficiency and use of graphics.

## Prerequisites/Corequisites

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**Prerequisite(s):**

- Permission of instructor

## Instructional Method

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### In-Person

Traditional concept of in person. Mandatory attendance is at the discretion of the instructor.

## Required Texts/Materials

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**Statistical Computing with R** by Maria L. Rizzo, 2nd Ed., 2019.

**ISBN:** 9781466553323

**Publisher:** CRC Press LLC

## Course Objectives/Student Learning Outcomes

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1. Write efficient code for solving complex statistical problems.
2. Understand and explain core principles of data visualization and apply best practices for selecting appropriate visualization types based on the structure and type of data.
3. Develop simulations to generate random variables from various distributions and apply them to estimate statistical properties.
4. Apply optimization algorithms (e.g., gradient descent, Newton-Raphson) to fit statistical models and solve optimization problems in maximum likelihood estimation or Bayesian inference.

## Faculty Rights and Responsibilities

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Florida Atlantic University respects the rights of instructors to teach and students to learn. Maintenance of these rights requires classroom conditions that do not impede their exercise. To ensure these rights, faculty members have the prerogative to:

- Establish and implement academic standards.
- Establish and enforce reasonable behavior standards in each class.
- Recommend disciplinary action for students whose behavior may be judged as disruptive under the Student Code of Conduct [University Regulation 4.007](#).

## Disability Policy

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In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at [www.fau.edu/sas/](http://www.fau.edu/sas/).

## Course Evaluation Method

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The grade will be based on homework assignments, midterm exams, and one final exam.

- Homework: 35%
- Midterm exams: 35%
- Final exam: 30%

## Code of Academic Integrity

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Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see [University Regulation 4.001](#).

## Attendance Policy Statement

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Students are expected to attend all their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations, or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances, and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for

a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.

## Religious Accommodation Policy Statement

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In accordance with the rules of the Florida Board of Education and Florida law, students have the right to reasonable accommodations from the University in order to observe religious practices and beliefs regarding admissions, registration, class attendance, and the scheduling of examinations and work assignments. University Regulation 2.007, Religious Observances, sets forth this policy for FAU and may be accessed on the FAU website at [www.fau.edu/regulations](http://www.fau.edu/regulations).

Any student who feels aggrieved regarding religious accommodations may present a grievance to the executive director of The Office of Civil Rights and Title IX. Any such grievances will follow Florida Atlantic University's established grievance procedure regarding alleged discrimination.

## Time Commitment Per Credit Hour

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For traditionally delivered courses, not less than one (1) hour of classroom or direct faculty instruction each week for fifteen (15) weeks per Fall or Spring semester, and a minimum of two (2) hours of out-of-class student work for each credit hour. Equivalent time and effort are required for Summer Semesters, which usually have a shortened timeframe. Fully Online courses, hybrid, shortened, intensive format courses, and other non-traditional modes of delivery will demonstrate equivalent time and effort.

## Course Grading Scale

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Letter Grade	Percentage
A	100 - 90%
A-	< 90 - 87%
B+	< 87 - 83%
B	< 83 - 80%
B-	< 80 - 77%
C+	< 77 - 73%
C	< 73 - 70%
C-	< 70 - 67%
D+	< 67 - 63%
D	< 63 - 60%
D-	< 60 - 50%
F	< 50 - 0%

## Grade Appeal Process

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You may request a review of the final course grade when you believe that one of the following conditions apply:

- There was a computational or recording error in the grading.
- The grading process used non-academic criteria.
- There was a gross violation of the instructor's own grading system.

[University Regulation 4.002](#) of the University Regulations contains information on the grade appeals process

## Policy on Make-up Tests, Late work, and Incompletes

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Any student missing a quiz or exam without an official excuse will receive a zero grade. Any excusable absence must be documented by a verifiable source, and the instructor should be notified AT LEAST ONE WEEK prior to the exam date. If a student misses an exam due to an emergency, such as a car accident or illness, the instructor must be notified WITHIN 24 HOURS after the exam, and written verifiable documentation is required. Students will not be penalized for absences due to participation in University-approved activities provided they notify their instructor and make appropriate arrangements well in advance of the quiz or exam. Similarly, reasonable accommodations will be made for students participating in a religious observance. A make-up must be completed within two weeks of the exam date, except in extraordinary circumstances.

## Policy on the Recording of Lectures

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Students enrolled in this course may record video or audio of class lectures for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach students about a particular subject. Recording class activities other than class lectures, including but not limited to student presentations (whether individually or as part of a group), class discussion (except when incidental to and incorporated within a class lecture), labs, clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, and private conversations between students in the class or between a student and the lecturer, is prohibited. Recordings may not be used as a substitute for class participation or class attendance and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct and/or the Code of Academic Integrity.

## Artificial Intelligence Preamble

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FAU recognizes the value of generative AI in facilitating learning. However, output generated by artificial intelligence (AI), such as written words, computations, code, artwork, images, music, etc., for example, is drawn from previously published materials and is not your own original work.

FAU students are not permitted to use AI for any course work unless explicitly allowed to do so by the instructor of the class for a specific assignment. [\[Policy 12.16 Artificial Intelligence\]](#)

Class policies related to AI use are decided by the individual faculty. Some faculty may permit the use of AI in some assignments but not others, and some faculty may prohibit the use of AI in their course entirely. In the case that an instructor permits the use of AI for some assignments, the assignment instructions will indicate when and how the use of AI is permitted in that specific assignment. It is the student's responsibility to comply with the instructor's expectations for each assignment in each course. When AI is authorized, the student is also responsible and accountable for the content of the work. AI may generate inaccurate, false, or exaggerated information. Users should approach any generated content with skepticism and review any information generated by AI before using generated content as-is.

If you are unclear about whether or not the use of AI is permitted, ask your instructor before starting the assignment.

Failure to comply with the requirements related to the use of AI may constitute a violation of the [Florida Atlantic Code of Academic Integrity, Regulation 4.001.](#)

Proper Citation: If the use of AI is permitted for a specific assignment, then use of the AI tool must be properly documented and cited. For more information on how to properly cite the use of AI tools, visit <https://fau.edu/ai/citation>

## Counseling and Psychological Services (CAPS) Center

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Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual therapy, group therapy, and crisis services, to name a few - offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>

## Student Support Services and Online Resources

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- [Center for Learning and Student Success \(CLASS\)](#)
- [Counseling and Psychological Services \(CAPS\)](#)



- [FAU Libraries](#)
- [Math Learning Center](#)
- [Office of Information Technology Helpdesk](#)
- [Center for Global Engagement](#)
- [Office of Undergraduate Research and Inquiry \(OURI\)](#)
- [Science Learning Center](#)
- [Speaking Center](#)
- [Student Accessibility Services](#)
- [Student Athlete Success Center \(SASC\)](#)
- [Testing and Certification](#)
- [Test Preparation](#)
- [University Academic Advising Services](#)
- [University Center for Excellence in Writing \(UCEW\)](#)
- [Writing Across the Curriculum \(WAC\)](#)

## Course Topical Outline

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Week	Topics
Week 1 - 2	R basics
Week 3	Review of probability and statistics
Week 4 - 5	Random number generator
Week 6 - 7	Data visualization
Week 8 - 9	Optimization
Week 10 - 11	Monte Carlo integration
Week 12 - 13	Resampling methods
Week 14 - 15	Markov Chain Monte Carlo methods

## Title IX Statement

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In any case involving allegations of sexual misconduct, you are encouraged to report the matter to the University Title IX Coordinator in the Office of Civil Rights and Title IX (OCR9). If University faculty become aware of an allegation of sexual misconduct, they are expected to report it to OCR9. If a

report is made, someone from OCR9 and/or Campus Victim Services will contact you to make you aware of available resources including support services, supportive measures, and the University's grievance procedures. More information, including contact information for OCR9, is available at <https://www.fau.edu/ocr9/title-ix/>. You may also contact Victim Services at [victimservices@fau.edu](mailto:victimservices@fau.edu) or 561-297-0500 (ask to speak to an Advocate) or schedule an appointment with a counselor at Counseling and Psychological Services (CAPS) by calling 561-297-CAPS.