FLORIDA ATLANTIC UNIVERSITY™

Undergraduate Programs—COURSE CHANGE REQUEST[1]

UUPC APPROVAL _____
UFS APPROVAL _____
SCNS SUBMITTAL _____
CONFIRMED _____
BANNER POSTED _____
CATALOG _____

DEPARTMENT: Mathematical Sciences

COLLEGE: Science

COURSE PREFIX AND NUMBER: STA 4102

CURRENT COURSE TITLE: RI: Computational Statistics

CHANGE(S) ARE TO BE EFFECTIVE (LIST TERM): Spring 2021

____ **TERMINATE COURSE (LIST FINAL ACTIVE TERM):**

CHANGE TITLE TO: Computational Statistics

CHANGE PREFIX FROM: **TO:**

CHANGE COURSE NO. FROM: 4102 **TO:** 3100

CHANGE CREDITS[2] FROM: **TO:**

CHANGE GRADING FROM: **TO:**

CHANGE WAC/GORDON RULE STATUS[3]
ADD* _____ **REMOVE** _____

CHANGE GENERAL EDUCATION REQUIREMENTS[4]
ADD* _____ **REMOVE** _____

*WAC and General Education criteria must be clearly indicated in attached syllabus. For WAC Guidelines: *www.fau.edu/WAC*. Please attach General Education Course Approval Request: *www.fau.edu/deanugstudies/GeneralEdCourseApprovalRequests.php*

CHANGE DESCRIPTION TO:
Computer algorithms for evaluation, simulation and visualization, random number generation, sampling from prescribed distributions. Simulations, graphics for data display, computation of probabilities and percentiles, hypothesis testing, simple linear regression and multiple regression.

CHANGE PREREQUISITES/MINIMUM GRADES TO*:
(MAC 2311 or MAC 2281 with a minimum grade of "C") and (STA 2023 or higher with a minimum grade of "C") and some programming experience

CHANGE COREQUISITES TO*:

CHANGE REGISTRATION CONTROLS TO:

*Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade (default is D-).

Attach syllabus for **ANY** changes to current course information.

Should the requested change(s) cause this course to overlap any other FAU courses, please list them here.

Please consult and list departments that might be affected by the change(s) and attach comments.[5]

Faculty contact, email and complete phone number:

Lun-Ching Chang, changl@fau.edu, 561-297-3351

Approved by:	*Date:*
Department Chair: [signature]	2/25/20
College Curriculum Chair: Jerry Haky (via email confirmation)	3-27-20
College Dean: [signature]	3/3/20
UUPC Chair: Jerry Haky (via email confirmation)	3-30-20
Undergraduate Studies Dean: Edward Pratt (via email confirmation)	3-31-20
UFS President:	
Provost:	

1. **Syllabus** must be attached; syllabus checklist recommended; see guidelines and checklist: *www.fau.edu/academic/registrar/UUPCinfo*
2. Review **Provost Memorandum: Definition of a Credit Hour** *www.fau.edu/provost/files/Definition_Credit_Hour_Memo_2012.pdf*
3. **WAC approval** (attach if necessary)
4. **Gen. Ed. approval** (attach if necessary)
5. **Consent** from affected departments (attach if necessary)

Email this form and syllabus to *mjenning@fau.edu* **seven business days before** the University Undergraduate Programs Committee meeting so that materials may be viewed on the UUPC website prior to the meeting.

STA 3100, Spring 2021

Computational Statistics

TR, 2:00 pm – 3:20 pm, SE 271

Lun-Ching Chang, Ph.D.

Email: changl@fau.edu
Office Location: SE 222
Office Hours: TR, 9:00am - 11:00am
Tel: 561-297-3351

Course Description: This course will mainly cover the following topics:

1. **Introduction to R language**: Programming statistical graphics; Programming with R; Simulation and Computational linear algebra.
2. **R Shiny apps development**: Build Shiny app; Customize reactions in Shiny and Customize appearance in Shiny.
3. **Applications in statistical methodology**: Statistical analysis using graphics; Statistical inference; Analysis of variance; Simple and multiple linear regression.

Prerequisite(s): (MAC 2311 or MAC 2281 with a minimum grade of "C") and (STA 2023 or higher with a minimum grade of "C"), and some programming experience.
Credit Hours: 3

Textbooks(s): Optional

1. *Learning R, A Step-by-Step Function Guide to Data Analysis*
   Author(s): Richard Cotton; **ISBN-13:** 978-1449357108

Course Objectives:
Though completion of this course, students will gain proficiency using the R language to perform a wide variety of statistical analyses in data science and effectively use data visualization to explore data and report results; after successful completion a student has the ability to build R shiny apps.

Grading: There will be 5 homework assignments, each worth 12% of the final grade, and one final project. Late homework assignments will be not accepted.

Assignments	60%
Final Project	40%

Letter Grade Distribution:

≥ 90.00	A	65.00 – 69.99	C−
85.00 – 89.99	A−	60.00 – 64.99	D+
80.00 – 84.99	B	55.00 – 59.99	D
75.00 – 79.99	B−	50.00 – 54.99	D−
70.00 – 74.99	C	≤ 49.99	F

Course Policies:

- **Classroom Etiquette:** University policy on the use of electronic devices states: "In order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular telephones and pagers, are to be disabled in class sessions."

- **University Attendance Policy:** Students are expected to attend all of 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.

- **Academic Integrity:** Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty, including cheating and plagiarism, 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 values on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see `http://www.fau.edu/regulations/chapter4/4.001_Code_of_Academic_Integrity.pdf`

- **Disability Policy Statement:** 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 `http://www.fau.edu/sas`

- **Counseling and Psychological Services (CAPS):** 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 counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to `http://www.fau.edu/counseling/`

Tentative Course Outline:
The weekly coverage might change as it depends on the progress of the class.

Week	Content
Week 1	• Introduction to R language
Week 2	• Programming statistical graphics (Homework assignment 1)
Week 3	• Programming with R
Week 4	• Simulation (Homework assignment 2)
Week 5	• Computational linear algebra
Week 6	• Final project: R Shiny app development • Build Shiny app
Week 7	• Customize reactions in Shiny
Week 8	• Customize appearance in Shiny (Homework assignment 3)
Week 9	• Statistical analysis using graphics
Week 10	• Programming in Statistical inference (Homework assignment 4)
Week 11	• Programming in Analysis of variance
Week 12	• Programming in Simple and multiple linear regression (Homework assignment 5)
Week 13	• Programming in Simple and multiple linear regression *cont.*
Week 14	• Final project presentations
Week 15	• Final project presentations