UF | UNIVERSITY of FLORIDA

STA 4210 Applied Regression Analysis Spring 2020

Instructor: John Seppala
116A Griffin-Floyd Hall
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352-273-2971
MTWR 11:15am-12:00pm

The instructor is your sole point of contact for matters regarding course administration, course policy, course grades, and examinations. The instructor is also your secondary point of contact for assistance with course material, homework grades, and the use of technology.

TAs: Cheng Zeng
234 Griffin-Floyd Hall
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TBD x:xxxx-x:xxxx

The TA is your primary point of contact for assistance with course material, homework grades, and the use of technology.

Class: MWF 12:50pm-1:40pm Period 6
100 Griffin-Floyd Hall Section 17FB

Textbook: *Applied Linear Statistical Models* (5e), by Kutner, Nachtsheim, Neter, and Li. The e-book is in Canvas.

Description: A study of basic and advanced concepts in simple linear regression and multiple regression. Topics include interval estimation and hypothesis testing for model parameters and output values, nonlinear predictors, model selection and validation, diagnostics, and remedial measures. Credits: 3. Prerequisite: STA 3024, STA 3032, or STA 4321, or STA 2023 with either MAS 3114 or MAS 4105.

Exams: Three exams will be given during class time on the following dates:

Fri, Feb 7   Fri, Mar 20   Wed, Apr 22

The exams will each consist of multiple-choice and free-response questions. A pre-printed formula sheet and a set of statistical tables will be given. A scientific or graphing calculator without external communication capability may be used. No other aids (physical, electronic, or otherwise) are permitted. A review session will be held during the class period prior to each exam. Although many concepts learned early in the course continue to be used later in the course, the exams are not designed to be cumulative. There is not a final exam for the course. Make-up exams will **only** be given for **documented** cases of emergencies and **extreme** illnesses. Proper notification should be given to the instructor as soon as possible. Any approved make-up exams will be given at 1:00pm on Wed, Apr 29. **No** credit is given for an exam that is not taken.

Homework: Eleven homework assignments will be submitted in paper form at the beginning of class on selected days. Homework assignments and their due dates will be posted in advance. Late homework will **not** receive credit. The lowest homework score will be dropped. Homework is assigned to help reinforce the material learned in class—not just to get the right answer and improve your course grade! Homework solutions must show all formulas and steps used and be the sole work of each individual student.

Project: A project will be assigned during the semester and submitted in Canvas. The project will consist of an in-depth analysis of a data set using procedures learned in class. The project **must** be done with one other classmate. The data collection phase of the project will be due at 11:30 pm on Mon, Feb 17, and the data analysis phase of the project will be due at 11:30 pm on Fri, Mar 27. Late projects will **not** receive credit. More details about the project will be given during the semester.

Canvas: Students should log in to Canvas regularly to view and download class files, check announcements and assignments, and view and participate in discussions. Visit https://elearning.ufl.edu or call 352-392-4357 for help with Canvas.

Attendance: Daily attendance is expected of every student. I encourage every student to arrive to class prepared to engage in the learning process that unfolds during each day's lesson. Several important concepts and methods are covered in much more detail in lecture than in the textbook, course notes, or homework assignments. Poor attendance is often a major contributing factor to low exam grades.

Grading: Numeric grading will be on a point system as follows:

Exams	3 x 200	=	600 points
Homework	8 x 25	=	200 points
Project	1 x 100	=	100 points
Syllabus Quiz	1 x 100	=	100 points
Total			= 1000 points

The grading scale will be as follows:

A = 900-1000, A− = 880-899, B+ = 860-879, B = 800-859, B− = 780-799,
C+ = 760-779, C = 680-759, D = 600-679, E = 0-599.

Student Honor Code:

UF students are required to adhere to both the Student Conduct Code and the Student Honor Code, https://sccr.dso.ufl.edu/students/student-conduct-code/, in all aspects of the course. On exams, students will write and sign the Honor Pledge: "On my honor, I have not given, received, or witnessed unauthorized aid on this exam." Students are also bound by honor to report academic misconduct to the instructor. Any student found in violation of the Honor Code will receive a final course grade of "E" and may be subject to additional disciplinary action by the University. Thank you in advance for making a personal commitment to maintaining a high standard of integrity and for helping promote an atmosphere of respect for one another that is conducive to learning, both in class and online.

Students with Disabilities:

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565) near the beginning of the semester by providing appropriate documentation. Once registered, students will receive an accommodation letter which **must** be reviewed with the instructor in order for the accommodations to be implemented in the course. Students must also schedule exams individually through the DRC.

Faculty Course Evaluations:

Student feedback is welcomed by the instructor and beneficial to both current and future students in the course. Students are requested to provide feedback on the quality of instruction in this course by completing two brief confidential evaluations, both at the midpoint of and towards the end of the semester, at https://evaluations.ufl.edu. Summaries of the evaluation results can be found at https://evaluations.ufl.edu/results.

University Services:

The University of Florida is committed to ensuring the well-being of all students by creating a culture of care on campus. Members of the community are encouraged to look out for each other and to reach out for help as needed. Please contact one of the following resources if you or another student would benefit from services.

U Matter, We Care www.umatter.ufl.edu 352-294-2273

UF Counseling and Wellness Center www.counseling.ufl.edu 352-392-1575

UF Police Department www.police.ufl.edu 352-392-1111 (or 911 for emergencies)

Tentative Course Schedule:

Day	Date	Lesson	Section(s)	Topic(s)	HW Due
Mon	Jan 6		0.0	Syllabus	
Wed	Jan 8	A1	1.1-1.5	Simple linear regression models	
Fri	Jan 10	A2	1.6-1.8	SLR model estimates	
Mon	Jan 13	A3	2.1-2.3	SLR parameter inferences	
Wed	Jan 15	A4	2.4-2.6	SLR output inferences	Ch 1
Fri	Jan 17	A5	2.7-8, 2.10	SLR analysis of variance	
Mon	Jan 20			No class – Civil Rights Day	
Wed	Jan 22	A6	2.9, 2.11	SLR measures of association	
Fri	Jan 24	A7	3.1-3.3	SLR residual diagnostics	
Mon	Jan 27	A8	3.4-3.7	SLR residual tests	Ch 2
Wed	Jan 29	A9	3.8-3.10	SLR remedial measures	
Fri	Jan 31	A10	4.1-4.3	SLR joint inferences	
Mon	Feb 3	A11	4.4-4.7	SLR additional topics	Ch 3
Wed	Feb 5		Review		
Fri	Feb 7		Exam #1		Ch 4
Mon	Feb 10	B1	5.1-5.7	Matrix algebra tutorial	
Wed	Feb 12	B2	5.8-5.13	SLR with matrix algebra	
Fri	Feb 14	B3	6.1-6.4	Multiple regression models and estimation	
Mon	Feb 17			No class – Project data collection due	
Wed	Feb 19	B4	6.6-6.7	MR parameter and output inferences	Ch 5
Fri	Feb 21	B5	6.5, 6.8	MR ANOVA, diagnostics and remedies	
Mon	Feb 24	B6	7.1-7.3	MR extra sums of squares	
Wed	Feb 26	B7	7.4-7.5	MR partial correlation and standardization	Ch 6
Fri	Feb 28			No class – Spring Break	
Mon	Mar 2			No class – Spring Break	
Wed	Mar 4			No class – Spring Break	
Fri	Mar 6			No class – Spring Break	
Mon	Mar 9	B8	7.6	MR multicollinearity	
Wed	Mar 11	B9	8.1	Polynomial regression models	
Fri	Mar 13	B10	8.2-8.4	Interactions and categorical predictors	Ch 7
Mon	Mar 16	B11	8.5-8.6	Composite regression models	
Wed	Mar 18		Review		
Fri	Mar 20		Exam #2		Ch 8
Mon	Mar 23	C1	9.1, 9.3	Model building and selection	
Wed	Mar 25	C2	9.4-9.5	Automated search procedures	
Fri	Mar 27			No class – Project analysis due	
Mon	Mar 30	C3	9.6	Model validation	
Wed	Apr 1	C4	10.1-10.2	Model adequacy and outliers	
Fri	Apr 3	C5	10.3-10.4	Leverage and influencers	Ch 9
Mon	Apr 6	C6	10.5	Multicollinearity diagnostics	
Wed	Apr 8	C7	11.1	Weighted least squares regression	
Fri	Apr 10	C8	11.2	Ridge regression	Ch 10
Mon	Apr 13	C9	11.3	Robust regression	
Wed	Apr 15	C10	11.4	Nonparametric regression	
Fri	Apr 17	C11	11.5	Bootstrap estimation	
Mon	Apr 20		Review		
Wed	Apr 22		Exam #3		Ch 11