STA 4502/5507 (Class number 21258/23825)

Fall 2019

Nonparametric Statistical Methods

T 08:30-10:25 and R 09:35-10:25 in FLO 100

Instructor: Demetris Athienitis

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Teaching Assistant: Christopher Murphy

Office: See office hours in e-Learning under "Pages"
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Course Website: e-Learning

Course Notes: Written on board. Online notes under construction.

Course Communication:

- Discussion forum in e-Learning.
- Office hours (posted under "Pages" in e-Learning).
- E-mail for questions regarding course policies. (Ensure that **STA 4502** or **5507** is in the subject line. Failure to do so may result in a non-response.)

Required Text(s): *Nonparametric Statistical Methods*, 3rd Edition (Companion `R` site)
ISBN-13: 978-0-470-38737-5
Author(s): Myles Hollander, Douglas A. Wolfe, Eric Chicken

Course Description: Introduction to nonparametric statistics, including one- and two-sample testing and estimation methods, one and two-way layout models and correlation and regression models.
Prerequisite(s): STA 3024 or STA 3032 or STA 4210 or STA 4322.
Credit Hours: 3

Software: You will need a computer for the homework assignments and practise. The main software used in class will be `R`. For more help and resources visit `http://www.stat.ufl.edu/~athienit/software.html`

Course Goals and Objectives:

1. Comprehend the difference between parametric and nonparametric methods
2. Learn how nonparametric methods provide exact P-values for tests, exact coverage probabilities for confidence intervals, exact experimentwise error rates for multiple comparison procedures, and exact coverage probabilities for confidence bands.
3. Develop a facility for deciding which nonparametric techniques are applicable in various situations
4. Get a sense for the advantages of nonparametrics such as relative insensitivity to outlying observations
5. Become familiar with the use of the software `R` to apply various nonparametric methods to data sets.

Course Policies

The instructor reserves the right to update any parts of this syllabus as necessary.
Students will promptly be notified of any changes.

Demeanor

All members of the class are expected to follow rules of common courtesy in all classroom discussions, email messages, threaded discussion and chats. Please refer to expected class netiquette online and during class.

Electronic devices

During class time, only laptops and tablets are allowed. Cell phones, smartphones, and phablets are not permissible unless otherwise specified by the instructor. A student found using said device or permissable device used for non-classroom related activities during class time will be asked to leave the classroom which may result in missing any remaining assignments administered during class time.

Assignments

- Students are expected to work independently, unless otherwise specified in writing. **Offering** and **accepting** solutions from others is an act of **plagiarism**, which is a serious offense and **all involved parties will be penalized according to the UF Honor Code** receiving a 0 on the assignment and an incident report filed. Discussion amongst students is encouraged, but when in doubt, direct your questions to the instructor.
- **No late assignments will be accepted under any circumstances**.
- Students are expected to show and explain how the answers were obtained.
- All electronically **submitted work must be in pdf format** or a standard file format such as doc, jpeg, etc.

Homework/Quizzes

- There will be homework assigned on a regular basis as *suggested homework* (not to be turned in) containing data analysis problems and/or book exercises. A (one attempt) *timed quiz* assignment based on the topics covered in class (and loosely based on the suggested homework) will be administered the day of the suggested homework deadline. It is highly encouraged to use a **reliable device** with a **reliable wired ethernet internet connection** and to use a browser such as **Chrome** (Safari may not render some immages). (As soon as work is submitted a grade of 0 will show up as a placeholder until the assignment is graded.) For the best preparation students are encouraged to complete the full suggested homework set by the deadline posted on the suggested homework. Solutions to suggested homework will not be posted, but solutions to the quizzes will be.
- A programming homework assignment posted and based on `R`. This homework is to be submitted in its entirety on the posted deadlines.

Exams

There will be three (3) **in-class** exams that may comprise of multiple choice questions ($\approx 80\%$) and some open-ended questions ($\approx 20\%$). Exams will emphasise more on conceptual questions while HW/Quizzes will be more computational (not always).
Important dates:

Exam #1 ..... September 24, at 08:30
Exam #2 ..... October 29, at 08:30
Exam #3 ..... December 11, at 15:00

Allowed material:

- Formula sheet.
- Scientific/Graphing Calculator.

Grading

Grade distribution:

Exams 1, 2 and 3	70% (15% lowest, 25% second best, 30% best)
Homework/Quizzes	25% (lowest 2 scores are dropped out of the 11)
Programming	5% (3 assignments)
Extra Credit	0-1% (discussion forum and classroom participation)

Letter grade assignment:

		A	91 to 100	A-	88 to $<$ 91
B+	84 to $<$ 88	B	80 to $<$ 84	B-	77 to $<$ 80
C+	74 to $<$ 77	C	70 to $<$ 74	C-	67 to $<$ 70
D+	64 to $<$ 67	D	60 to $<$ 64	D-	55 to $<$ 60
E	$<$ 55				

To view the result of the letter grades to your GPA please visit the UF Grade and Grading Policies.
Final grades shown on Canvas are not accurate because they do not account for the conditional weighing of exams and quizzes.
Final grade **will not be rounded up** and can be calculated with exams as a % (out of 100) and quizzes out of 10 points

$$\begin{aligned}\text{Final} =& 0.15(\text{worst exam}) + 0.25(\text{second best exam}) + 0.30(\text{best exam}) \\ &+ 0.25(100)\left(\frac{\sum^{\#\text{ total}} \text{quizzes} - \sum^{\#\text{drops}} \text{lowest}}{10(\#\text{ of quizzes} - \#\text{ of drops})}\right) \\ &+ 0.05(100)\left(\frac{\sum^{3} \text{programming}}{30}\right) \\ &(+\text{Extra})\end{aligned}$$

Make-up

Requirements for class attendance and make-up exams, assignments, and other work in this course as well as policies regarding absences, religious holidays, illness and student athletes are consistent with UF Attendance Policies

Additional make-up policy requirements:

- Every effort should be made to complete the assignment/exam during the open period. Only extreme situations will warrant a makeup. Contact the instructor prior to the exam - as soon as you realize you will be unable to take the assignment/exam at the scheduled time. Each case will be reviewed individually. Valid and detailed documentation is a prerequisite for scheduling a makeup under such extenuating circumstances.
- If you have an emergency on the day of the assignment/exam, the instructor must be contacted by midnight of the day of the assignment/exam.
- Make-ups need to be scheduled within a week from the assignment deadline. Student is responsible for scheduling.
- Additional Note: Being on vacation or booking a trip prior to the completion of the semester is not a valid reason to request a makeup. Please reference the most recent Academic Calendar

Addressing Issues

Technical difficulties

Please contact the UF Help desk via e-Learning "Help" tab or UF IT Service Portal. Any requests for make-ups due to technical issues must be accompanied with appropriate documentation/proof including screenshots and communication with the help desk. You MUST contact your instructor within 24 hours of the technical difficulty if you wish to request a make-up.

Grievances/Commendations

Should you have any girevances or commendations with your experience in this course you can always address them

- to the instructor at athienit@ufl.edu, or
- the Department of Statistics.

For issues that are not satisfactorily resolved at the department level or which seem to be broader than one department, students are referred to Student Complaints On-Campus or On-Line Students Complaints

UF and CLAS Policies

Dropping, Withdrawing and Incomplete

Dropping and Withdraw

For late course drops and course withdrawals please visit
https://catalog.ufl.edu/UGRD/academic-regulations/dropping-courses-withdrawals/

Incomplete

An incomplete grade may be assigned at the discretion of the instructor as an interim grade for a course in which the student has completed a major portion of the course with a passing grade, been unable to complete course requirements before the end of the term because of extenuating circumstances, and obtained agreement from the instructor and arranged for resolution of the incomplete grade in the next term. Instructors are not required to assign incomplete grades. For complete details please visit CLAS incomplete grade policies and forms.

Accommodating Students with Disabilities

Students requesting accommodation for disabilities must first register with the Dean of Students Office. The Dean of Students will provide documentation to the students who must then provide this documentation to the instructor when requesting information. You must submit this documentation prior to submitting any assignments for which you are requesting accommodation.

Academic Misconduct

Students are held accountable to the UF Honor Code.

Evaluations

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at https://evaluations.ufl.edu. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at https://evaluations.ufl.edu/results/.

Tentative Course Outline

Chapter	**Content**	**Textbook**	HW/Quiz
1	Introduction: Advantages of Nonparametric Methods	1.1-1.5	1
2	The Dichotomous Data Problem	2.1-2.3	2
3	The One-Sample Location Problem	3.1-3.8, 3.11	3
Exam 1			
4	The Two-Sample Location Problem	4.1-4.5	4
5	The Two-Sample Dispersion Problem and Other Two-Sample Problems	5.2-5.5	5
6	The One-Way Layout	6.1-6.2, 6.4, 6.8-6.10	6
7	The Two-Way Layout	7.1-7.3, 7.5, 7.9, 7.16	7
Exam 2			
8	The Independence Problem	8.1-8.3, 8.7	8
9	Regression Problems	9.1-9.3, 9.6-9.8	9
10	Comparing Two Success Probabilities	10.1-10.5	10
Exam 3			