STAT 345-01: Nonparametric Statistics

Syllabus and Course Information – Fall 2018

2018 August 28

Course Information

Lectures:
TR 9:30am-10:45am, LOW 12-1105, beginning 2018 August 28 and ending December 6.

Holidays (no lecture):
Oct. 9 (Fall Break); Nov. 22 (Thanksgiving).

Instructor:
Dr. John T. Whelan; LAC 74-2063, 475-5083; `jtwsma@rit.edu` or `john.whelan@astro.rit.edu`
Office Hours: TR 11am-11:50am (at Java Wally's) & 2pm-2:50pm (in LAC 74-2063), or by appointment. (Please email to make an appointment.)

Course Website: `http://ccrg.rit.edu/~whelan/STAT-345/`

Required Textbook:

- Conover, W. J, *Practical Nonparametric Statistics*, 3rd edition (Wiley, 1999)

Recommended Textbook:

- Hollander, M., Wolfe, D. A., and Chicken, E., *Nonparametric Statistical Methods*, 3rd edition (Wiley, 2014)

Other Useful Resources:

- Higgins, J. J., *Introduction to Modern Nonparametric Statistics*, 1st edition (Brooks/Cole, 2004)
- Gibbons, J. D. and Chakraborti, S., *Nonparametric Statistical Inference*, 5th edition (CRC, 2011)

Prerequisites:
Probability and Statistics II (COS-MATH-252) or Applied Statistics (COS-STAT-205)

Course Outline:
`https://www.rit.edu/science/sites/rit.edu.science/files/COS-STAT-345-NonparametricStatistics.pdf`

Scope of Course:
The course will cover most of Conover, including the following topics:

1 Fundamentals of Statistical Inference
2 Binomial Tests
3 Rank-Based Tests
4 Kolmagorov-Smirnov Statistics for Comparing Distribution Functions
5 Contingency Tables

A tentative timetable for the pace of the course (**subject to change**) is at
`http://ccrg.rit.edu/~whelan/courses/2018_3fa_STAT_345/calendar.html`

Computer Environment:
Computational assignments and projects will be designed to be carried out in the Python programming language, making use of the Scientific Python (SciPy) `stats` package. Please install python (which is free software[1]), including NumPy, SciPy, matplotlib, ipython and jupyter. Depending on your level of comfort, you can install these packages directly using your package manager, or using a packaged python environment such as Anaconda `https://www.anaconda.com/distribution/` or Enthought Canopy `https://store.enthought.com/downloads/`

Homework and Problem Sets:
Students are expected to read the relevant sections of the text *before* each class, to be prepared for class discussions.

Additionally, about once per week, there will be a problem set due, which should be written up neatly and handed in on the due date. If you choose to submit a homework electronically, it must be in pdf format unless otherwise specified. Problem sets will not be accepted after solution sets have been distributed.

Exams:
Two preliminary exams, in class, **tentatively** planned for Tuesday, Oct. 1 and Thursday, Nov 8. Final exam (cumulative) scheduled for Thursday, Dec. 13 08:00am-10:30am, LOW 12-1105.

Email List: `discuss-statistics-whelan@lists.rit.edu`
Everyone registered for the course as of August 27 should have been subscribed with their RIT address. You can edit your settings or subscribe from a different address via
`https://lists.rit.edu/mailman/listinfo.mmcgi/discuss-statistics-whelan`

All students are expected to be subscribed to the course email list from address which they read frequently, as organizational announcements may be sent there. Students are also encouraged to use the email list to discuss concepts and issues related to the course.

I will also use the email list to respond to student questions, so that the entire class can benefit from the exchange. If you email me a question which you don't want shared with the class, you must specify that explicitly in the email. (Similarly, if you want to ask a question anonymously, specify that you'd like your name left out of any reply posted to the email list.)

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[1]both in the sense of being covered by an open license and in the sense of not costing money

Course Policies

Attendance and Class Participation:
All students are expected to attend and participate in class discussions. This entails not only attending class, but being prepared for class by having read the relevant sections of the textbook.

Exam Attendance:
Makeup exams will only be granted in extreme circumstances. Unless you have a documentable emergency or an illness which requires medical attention, you should not expect to be able to make up a missed exam. If you do have a serious illness or emergency, please contact me as soon as possible.

Collaboration:
Collective brainstorming is a time-honored tool of scientists attacking a problem, be they freshmen or tenured professors. That said, working through the homework problems is an important aid to gaining mastery of the material, and a student who simply transcribes the solution of another student or of the group will likely have trouble come exam time. In light of this, solutions which are clearly (in my judgement) transcriptions from other sources or from each other will receive reduced or no credit. You should use outside sources or group discussions as needed to get the idea of how to do a problem, then go off and write up your own solution.

Additionally, in the interest of learning proper academic procedures, you should acknowledge any outside help you get on homeworks, whether from other students or from references outside the textbook.

Working together on exams or copying off of someone else's test is of course cheating and will not be tolerated.

Grades:
Grades will be based on the following components:

20% First Prelim Exam	25% Problem Sets, Including Project
20% Second Prelim Exam	35% Final Exam

Your score on each component of the course (each prelim, the final, and all the homeworks together) will be converted to a numerical "grade point" score, and the weighted average of those five scores will be your final grade, converted to a letter grade according to the scale below.

Grading Scale:

A 3.83–4.5		C+ 2.17–2.5	
A- 3.5–3.83		C 1.83–2.17	
B+ 3.17–3.5		C- 1.5–1.83	
B 2.83–3.17		D 0.5–1.5	
B- 2.5–2.83		F (-0.5)–0.5	

Graded Feedback:
Under normal circumstances, your homeworks and exams will be corrected, evaluated and returned with feedback within two weeks. You will receive updates on your grades to date (a grade for each exam and a preliminary composite grade for the homeworks so far) three times during the semester: after each preliminary exam, and before the final exam. You are welcome to discuss with me your progress in between these milestones.

Special Arrangements for Students with Disabilities:
Students with disabilities who wish to receive accommodations in this class should contact the Academic Accommodations Office at 475-2023 or via their website
`http://www.rit.edu/studentaffairs/disabilityservices/accommodations.php`
as soon as possible so that warranted accommodations can be implemented in a timely fashion. The Academic Accommodations Office is located in SAU(04)-1150.