

STAT:6560 (22S:156) Applied Time Series Analysis  
Spring 2018

1. Instructor: Kung-Sik Chan SH 263 335-2849 [kung-sik-chan@uiowa.edu](mailto:kung-sik-chan@uiowa.edu)

office hours: MWF 2:30 - 3:30, or by appointment.

2. Department: Statistics and Actuarial Science  
DEO contact information (Joseph B. Lang, 241 Schaeffer Hall, 335-0712,  
[joseph-lang@uiowa.edu](mailto:joseph-lang@uiowa.edu))

3. Time and location of class: 1:30P - 2:20P MWF 14 MH

4. Textbook: "Time Series Analysis with Applications in R" By Jonathan  
Cryer and Kung-Sik Chan. 2nd edition, published by Springer Verlag.

The objective of the present course is to introduce some statistical methods  
useful for analyzing univariate time series obtained from scientific studies  
with emphasis on forecasting and statistical inference. We plan to cover  
chapters 1 to 11 and other selected topics from the book, if time permits.

Statistical softwares: We will mainly use R (GNU Splus) for statistical  
analysis. R will be available at the ITC in Schaeffer Hall. R can be  
freely downloaded from <http://www.r-project.org/> An R package called  
TSA has been specifically developed that implements almost all methods  
introduced in the book. The lone exception requires SAS.

5. Course requirements:

|                              | date                             | percent |
|------------------------------|----------------------------------|---------|
| Homework                     |                                  | 10%     |
| Quizzes                      | 1/26, 2/7, 2/19, 3/21, 4/2, 4/13 | 25%     |
| Exam 1                       | 3/2 (Friday)                     | 25%     |
| Exam 2                       | 4/27 (Friday)                    | 25%     |
| Final (Project presentation) | during the final exam time       | 15%     |

Homework must be handed in by the BEGINNING of the lecture on the  
due date. Late homework will be marked but NO CREDIT will be given.  
Each homework carries approximately equal weight and the one with the  
lowest mark will be dropped from the determination of the final grade.  
Discussion with fellow students on the exercises of the homework is al-  
lowed. However, each student must submit his or her OWN solutions.

There are six quizzes; each about 15 minutes long. Exams and quizzes are  
closed book; however, you may have one page ( $8.5 \times 11$ ) of notes. The  
quiz with the lowest mark will be dropped, so no make-up quiz will be  
allowed. Each student is required to work INDIVIDUALLY on a project  
analyzing a real time series, and write a project report. Each student will

be required to do an approximately 5-minute presentation on the final exam date to be determined by the UI Registrar. The project report including the data has to be submitted by the time of presentation, via email.

**Project:** A real time series, of length at least 40, should be used for the analysis. A one-page proposal outlining the scientific questions to be addressed and the relevant techniques to be employed, with a separate listing of the data, has to be handed in during class on April 20. The final written report should be typed and include a one-page non-technical summary of the findings, followed by the background of the scientific questions, the body of technical analyses with interpretations, a conclusion and the listing of the data. Including graphics, the report ordinarily should not exceed 15 pages in length. Typed report has to be handed in by the time of presentation, via email

6. Grades: Your grade for this course will be assigned according to the following *approximate* scale:

|    |    |     |   |
|----|----|-----|---|
| 90 | to | 100 | A |
| 80 | to | 89  | B |
| 70 | to | 79  | C |
| 60 | to | 69  | D |
| 0  | to | 59  | F |

This scale is not absolute, and the cutoff points may vary depending on the difficulty of the exams. Also, borderline cases may receive a + or -.

7. Students are expected to attend every class unless for documented reasons including sickness, mandatory religious obligations or unavoidable circumstances. See <https://clas.uiowa.edu/faculty/student-attendance-and-absences> for the CLAS policies on attendance.
8. Internet Resources My home-page <http://www.stat.uiowa.edu/~kchan/S235.htm> provides some links to useful Internet resources related to our course.
9. Miscellaneous:

**Administrative Home** The College of Liberal Arts and Sciences is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall, or see the CLAS Academic Policies Handbook at <http://clas.uiowa.edu/students/handbook>.

**Electronic Communication** University policy specifies that students are responsible for all official correspondences sent to their University of Iowa e-mail address (@uiowa.edu). Faculty and students should use this account for correspondences (Operations Manual, III.15.2, k.11).

**Accommodations for Disabilities** The University of Iowa is committed to providing an educational experience that is accessible to all students. A student may request academic accommodations for a disability (which includes but is not limited to mental health, attention, learning, vision, and physical or health-related conditions). A student seeking academic accommodations should first register with Student Disability Services and then meet with the course instructor privately in the instructor's office to make particular arrangements. Reasonable accommodations are established through an interactive process between the student, instructor, and SDS. See <http://sds.studentlife.uiowa.edu/> for information.

**Academic Honesty** All CLAS students or students taking classes offered by CLAS have, in essence, agreed to the College's Code of Academic Honesty: "I pledge to do my own academic work and to excel to the best of my abilities, upholding the IOWA Challenge. I promise not to lie about my academic work, to cheat, or to steal the words or ideas of others; nor will I help fellow students to violate the Code of Academic Honesty." Any student committing academic misconduct is reported to the College and placed on disciplinary probation or may be suspended or expelled (CLAS Academic Policies Handbook).

**CLAS Final Examination Policies** The final examination schedule for each class is announced by the Registrar generally by the fifth week of classes. Final exams are offered only during the official final examination period. No exams of any kind are allowed during the last week of classes. All students should plan on being at the UI through the final examination period. Once the Registrar has announced the date, time, and location of each final exam, the complete schedule will be published on the Registrar's web site and will be shared with instructors and students. It is the student's responsibility to know the date, time, and place of a final exam.

**Making a Suggestion or a Complaint** Students with a suggestion or complaint should first visit with the instructor (and the course supervisor), and then with the departmental DEO. Complaints must be made within six months of the incident (CLAS Academic Policies Handbook).

**Understanding Sexual Harassment** Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff. All members of the UI community have a responsibility to uphold this mission and to contribute to a safe environment that enhances learning. Incidents of sexual harassment should be reported immediately. See the UI Office of the Sexual Misconduct Response Coordinator for assistance, definitions, and the full University policy.

**Reacting Safely to Severe Weather** In severe weather, class members should seek appropriate shelter immediately, leaving the classroom if

necessary. The class will continue if possible when the event is over. For more information on Hawk Alert and the siren warning system, visit the Department of Public Safety website.

**Attendance** Students are expected to attend every class unless for documented reasons including sickness or unavoidable circumstances. See <https://clas.uiowa.edu/faculty/teaching-policies-resources-student-absences> for the CLAS policies on attendance.