

STAT:7560 (22S:235) Time Series Analysis
Fall, 2017

1. Instructor: Kung-Sik Chan SH 263 335-2849 kung-sik-chan@uiowa.edu

office hours: MWF 11:30am-12:30, or by appointment.

2. Department: Statistics and Actuarial Science
DEO contact information (Joseph Lang, 241 SH, 335-0712,
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3. Time and location of class: 8:30am - 9:20am MWF 74 SH

4. Textbooks:
Time Series Analysis. By Hamilton (1994).

Topics include: time series regression, spectrum analysis, vector ARMAX models, generalized method of moments, unit roots and co-integration.

We aim to introduce several topics in spectrum analysis, Whittle likelihood, time-series regression and multiple time series. Multiple time series analysis provides methods for analyzing the underlying (dynamic) relationship between several processes. New insights on the underlying mechanism of the processes may be revealed with multivariate modeling, and hence possibly leading to more accurate prediction. We shall cover some modern topics related to classification and discrimination analysis with time-series data. Course materials are mainly taken from the textbook by Hamilton, and we'll read some research papers as well.

5. Prerequisite: 22S:156 Applied Time Series Analysis, or equivalent. 22S:153 and 154 or equivalent

6. Course requirements:

	date	percent
Homework		15%
Exam 1	Oct, 11 (Wednesday)	30%
Exam 2	Nov, 29 (Wednesday)	30%
Project report	(to be announced)	25%

Several homework assignments will be given. Discussion with fellow students on the exercises of the homework is allowed. Exams are open book. Each student has to do a project with multivariate time series data with at least two time-series variables, and present the analysis on a date to be announced. 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 Nov 17. 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.

7. Computer package. We shall mainly use SAS and the freeware R for doing computations and model fitting. SAS is available to students at no charge via the virtual desktop at <http://cs.its.uiowa.edu/software/sasstudenttudent.shtml>. R, with both windows and linux versions, is available in the ITC, and can be freely downloaded at <http://lib.stat.cmu.edu/R/CRAN/>
8. Grading policy: Your grade for this course will be assigned according to the following *approximate* scale:

85	to	100	A
75	to	84	B
65	to	74	C
55	to	64	D
0	to	54	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 -. The College and EPC ask that the A+ grade be used only in extraordinary situations.

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.