

# STAT146

## *Statistical Forecasting Techniques*



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### **Instructor**

Dr. Zhe Fei

Email: [zhe.fe@ucr.edu](mailto:zhe.fe@ucr.edu)

Assistant Professor of Statistics

Office: 1344 Olmsted Hall

Office Hours: Tu/Wed 1:00 – 2:00 PM, <https://ucr.zoom.us/j/8631592699>

*If you are unable to meet during any of these hours, please schedule an appointment with me for an alternative time.*

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### **Teaching Assistant**

Lee, Namhwa

Email: [namhwa.lee@email.ucr.edu](mailto:namhwa.lee@email.ucr.edu)

Office: Olmsted Hall 1417

Office Hours: 12 - 2pm Thursday or by appointment

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### **Class Hours**

Lecture: MW 11:00 am - 12:20 pm, Olmsted 1429

Discussion/Lab: F 11:00 am - 11:50 am, Olmsted 1429

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### **Prerequisite**

Statistics 160A or equivalent.

## Required Course Material

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Cryer, J. and Chan, K. *Time Series Analysis with Applications in R*, 2nd edition.

Copyright 2008, Springer. (Available in library.)

ISBN: 978-0-387-75958-6

e-ISBN: 978-0-387-75959-3

## Course Description

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This is a 4 unit course composed of 2 lecture sessions and 1 discussion/lab session per week. The purpose of this course is to introduce you the analysis of time series data. We will cover Chapters 1-9 in Cryer and Chan (2008). After completing this course, you should have a firm understanding and be comfortable with modeling and forecasting time series data using statistical package R.

## Homework

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Homework will be assigned regularly. Please submit your completed homework before the deadline. Homework will be partially graded by the teaching assistant. NO LATE homework will be accepted. Last minute computer failures, illnesses, etc. will not excuse you from meeting the homework assignment deadlines. But the lowest homework score will be dropped.

## Computing Lab

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The computer software **R** will be used as a supplement for this course. You will receive instructions about the usage of R and complete exercise worksheets during discussion/lab session. The R software is available for free from [www.r-project.org](http://www.r-project.org). Read carefully the "Introduction to R" Appendix in Cryer and Chan (starts on pp 423). The lab session will also give you the opportunity to ask questions regarding the lecture material or the homework assignments. Solutions to the homework might be also discussed. There will be weekly lab assignment and the lowest lab assignment score will be dropped.

## Exams

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There will be two exams. Exams are close-book and close-notes. A scientific calculator and a double-sided formula sheet (8.5x11) are allowed. Missed exams will receive a score of zero unless arrangements are made with me **prior** to the date of the exam. Alternative arrangements will be allowed only in the case of illness or family emergency. Documentation will be required.

## Course Grade

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Homework:	20%	
Lab:	10%	
Midterm:	30%	Wed, 2/7/2024, 11:00 am - 12:20 pm (tentatively)
Final:	40%	Monday, March 18, 8:00 a.m. -11:00 a.m. (tentatively)
Total:	100%	

Final grades are subject to curving.

A+	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
≥97	92<96	90<91	87<89	82<86	80<81	77<79	72<76	70<71	67<69	62<66	60<61	<60

## Your Responsibilities

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- Attend every class and be on time.
- Reviewing all the lecture notes and assigned reading material.
- Treat all assignments very seriously.
- Strive to understand everything we cover in class.
- Be responsible for all announcements and assignments made in class and/or on the course website.

## Tentative Topics

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1. Introduction
2. Fundamental concepts
3. Trends
4. Models for stationary time series: ARMA processes
5. Models for nonstationary time series: ARIMA processes
6. Model specification
7. Parameter estimation
8. Model diagnostics
9. Forecasting

## Important Notes

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10. There will be no sharing of any information or materials during quizzes or exams. Any sharing will result in a "0" for all persons involved.
11. Please check your scores at canvas each week. If you would like to appeal your grades, this appeal must be made in writing within one week of the posting of the grade. We will NOT change the scores after posting them for more than one week.
12. There will be NO any additional work for credits.
13. The course syllabus is a general plan for the course; deviations announced to the class and some revisions by the instructor may be necessary.

## Some Campus COVID-19 Policy

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1. All students in this course, as a condition of physical presence in the classroom (including for exams or tests in the classroom or other location on the UCR campus), must be compliant with the UC SARS-CoV-2 (COVID-19) Vaccination Program (Program) at all times. Compliance is easily achieved by providing proof of Full Vaccination or submitting a request for Exception or Deferral as required by the Program. Students in violation of the Program or related directives of the instructor will be subject to disciplinary or other remedial action. The Policy can be found at: [https://policy.ucop.edu/doc/5000695/SARS-CoV-2\\_Covid-19](https://policy.ucop.edu/doc/5000695/SARS-CoV-2_Covid-19)
2. All members of the campus community – including students, staff, and faculty – must adhere to public health and safety guidelines upon their return to the UCR campus. Guidelines include but are not limited to [mandatory vaccinations, face coverings](#) while indoors, and completing the [daily wellness check](#) when on campus owned or leased space. Latest rules: <https://campusreturn.ucr.edu/covid-screening-check>
3. If a student refuses to wear a face covering without an approved accommodation, they can be subject to a student conduct proceeding and will be asked to leave for the safety of all students.