

**FINANCIAL TIME SERIES 26:960:576**

**ODYSSEAS KANAVETAS**

Section 01 - Spring 2019  
1 Washington Park, Room 512, Newark  
Fridays 9:00 – 11:50 am

1 Washington Park, Room 1015A  
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Office Hours: After class or by appointment

## **COURSE DESCRIPTION**

This course covers applied statistical methodologies pertaining to financial time series, with an emphasis on model building and accurate prediction. Completion of this course will equip students with insights and modeling tools to analyze real world financial and business time series. Students are expected to have basic working knowledge of probability and statistics including linear regression, estimation and testing from the applied perspective. We will use R throughout the course.

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## **COURSE MATERIALS**

- Textbook: Required. Analysis of Financial Time Series, by Ruey S. Tsay (John Wiley, 2010), 3rd Edition.
- Check Blackboard ([blackboard.rutgers.edu](http://blackboard.rutgers.edu)) and your official Rutgers email account regularly.
- Other recommended books: Time Series Analysis and Its Applications: With R examples, by Robert Shumway and David Stoffer.
- Lecture notes, homework assignments, announcements, sample codes, data, and other supplemental materials will be posted on blackboard.

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## **ACADEMIC INTEGRITY**

*I do NOT tolerate cheating.* Students are responsible for understanding the RU Academic Integrity Policy ([https://slwordpress.rutgers.edu/academicintegrity/wp-content/uploads/sites/41/2014/11/AI\\_Policy\\_2013.pdf](https://slwordpress.rutgers.edu/academicintegrity/wp-content/uploads/sites/41/2014/11/AI_Policy_2013.pdf)). I will strongly enforce this Policy and pursue all violations. On all examinations and assignments, students must sign the RU Honor Pledge, which states, “On my honor, I have neither received nor given any unauthorized assistance on this examination or assignment.” Don’t let cheating destroy your hard-earned opportunity to learn. See [business.rutgers.edu/ai](http://business.rutgers.edu/ai) for more details.

## ATTENDANCE AND PREPARATION POLICY

Grade performance is a demonstrated function of attendance, preparation and participation. You can get behind very easily by skipping classes, resulting in a poor understanding of the material, which will show up as a poor grade for the class. Any class sessions missed by the student are the student's responsibility to make up, not the instructor's. Late arrival that causes disruption, early departure that causes disruption, excessive conversation among students (a disruption in its own right), inappropriate use of electronic devices that cause disruptions, and other actions that disrupt the classroom are unacceptable.

If I am to be absent, my department chair or I will send you notice via email and Blackboard as far in advance as possible. If you are to be absent, report your absence in advance at <https://sims.rutgers.edu/ssra/>. If your absence is due to religious observance, a Rutgers-approved activity, illness, or family emergency/death and you seek makeup work, also send me an email with full details and supporting documentation within 3 days of your first absence.

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## GRADING POLICY

Homework assignments will be given regularly. Late homework will NOT be accepted. Credit for homework is given based on HOW the problems are solved instead of a numerical answer.

There will be two exams. Both exams will be in-class and closed book. No makeup exam will be given in general.

Course grades are determined as follows:

Attendance: 10% Mid-term: 30% Homework: 20% Final Exam: 40%.

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## COURSE TENTATIVE SCHEDULE

Introduction to time series, review of basic probability and statistics methods.

Regression, decomposition and smoothing techniques.

Basic stochastic models.

ARIMA models and seasonal ARIMA models.

Seasonal ARIMA models, regression with TS errors.

ARCH and GARCH models.

Value at Risk.

Classification techniques.

High frequency models and market microstructure.

Vector AR models and pairs trading.

midterm

## SUPPORT SERVICES

If you need accommodation for a *disability*, obtain a Letter of Accommodation from the Office of Disability Services. The Office of Disability Services at Rutgers, The State University of New Jersey, provides student-centered and student-inclusive programming in compliance with the Americans with Disabilities Act of 1990, the Americans with Disabilities Act Amendments of 2008, Section 504 of the Rehabilitation Act of 1973, Section 508 of the Rehabilitation Act of 1998, and the New Jersey Law Against Discrimination. <https://ods.rutgers.edu>

If you are a military *veteran* or are on active military duty, you can obtain support through the Office of Veteran and Military Programs and Services. <http://veterans.rutgers.edu/>

If you are in need of *mental health* services, please use our readily available services.

If you are in need of *physical health* services, please use our readily available services.

If you are in need of *legal* services, please use our readily available services: <http://rusls.rutgers.edu/>

If you are in need of additional *academic assistance*, please use our readily available services.