San José State University
Social Sciences/Economics
Econ 138, Business and Economic Forecasting, 01, Spring, 2022

Course and Contact Information

Instructor:	Dr. Sanchita Mukherjee
Office Location:	DMH 214
EmailEmail	

If you have any questions or concerns about the course, please contact me through email: sanchita.mukherjee@sjsu.edu. Please expect 24 hours turnaround time

Class Days/Time:	MoWe 12:00PM - 1:15PM Jan 26 – Feb 11 Online Zoom live lecture link: https://sjsu.zoom.us/j/87243451853
Classroom:	Feb 14 – May 16: Dudley Moorhead Hall (DMH) 348
Prerequisites:	ECON 1A, ECON 1B and a semester of statistics.

Course Description

People routinely plan around the weather forecast, and are often displeased when it unfolds differently than expected. Similarly, movements in the economy matter to individuals, businesses, and governments, and these economic agents are likewise uncomfortable with unexpected changes in the economy. Thus, reliable ways to forecast economic variables are useful.

The purpose of this course is to introduce an array of methods and practices for analyzing time-series data and generating statistical forecasts. This will be accomplished through a mix of theoretical discussions and software-based applications to real-world problems. As will become clear, many familiar methods of inference are not well adapted to analyzing data with a time component, although some time-series methods do have close cross-sectional analogues.

Who should take this course? Economics 103A and 103B (Introduction to Econometrics) have long been the flagship statistical courses for the economics major; this course is intended as its companion. Any student with graduate school aspirations should take this course (as well as ECON 103A and 103B). Students interested in the quantitative aspects of business decisions will benefit greatly from this material as well. Practicing business professionals and consultants value these skills.

You are encouraged to use R. R is free, available on almost every operating system, and there are thousands of add-on packages to do almost anything you could ever want to do. I recommend you use R with RStudio.

Course Format

Technology Intensive, Hybrid, and Online Courses

This synchronous web-based course is supported on Canvas at: https://sjsu.instructure.com
Official announcements, lecture slides, lecture videos, quizzes, exams and other class materials will be posted in Canvas, so please check regularly for messages pertaining to the course.

You would need a computer (laptop/desktop) and access to internet. The exams will require Lockdown Browser. Lockdown browser does not work on tablets. So, you would need a laptop or a desktop computer. All of our assignments and exams would have to be submitted online via Canvas.

Course Goals and Learning Objectives

CLOs	PLOs	Problem Sets
1. Explain a variety of statistical model and filtering tools for time series and identify correct methods to analyze these models.	PLO 3 research methods	Learning outcomes are satisfied by problems sets that contain two parts. The theory part helps students to gain basic understanding of the time series analysis. The application part asks students to do practical time series analysis using R.
2. Choose an appropriate ARIMA model for a given set of data and fit the model using an appropriate package.	PLO 4 Specialist Area-Quantitative Methods PLO 5 Communication	The problem sets and group discussions help students form an interesting forecasting question, gather relevant data, apply appropriate methods, and write up their results in the form of a well-written report.
3. Be able to apply R in time series/forecasting situations		
4. Compute forecasts for a variety of linear methods and models.		

Required Texts/Readings

Textbooks

1) Real Econometrics: The Right Tools to Answer Important Questions by Michael Bailey (2nd Edition)
ISBN-13: 978-0190857462
ISBN-10: 0190857463
It is available at any of the online outlets (Amazon, for example). Used copies are fine. Older editions are fine.

2) Forecasting: Principles and Practice, Hyndman & Athanasopoulos (3rd ed., 2020)
The textbook is highly recommended and it is FREE

The course material will be based on a set of slides being prepared by the instructor.

Other Readings

Articles available online and/or Canvas.

Other technology requirements / equipment / material

The class will use a computer program called R to gain practical experience in econometrics. All students must have installed on their home machines free R and R Studio software.

Course Requirements and Assignments

1) Five Problem Sets (50% of your grade, 10% each):

Each of these problem sets involves empirical analysis on R. They will be announced and posted on Canvas. The data for the problem sets will be posted on Canvas as well. Please submit assignments on Canvas on the day they are due. Assignments submitted

III. Introduction. This section should state the nature and objectives of your forecasting project. Make sure to provide some background or motivation for why your project is interesting.
IV. Literature Review: Literature review is a comprehensive summary of previous research on your chosen topic. The literature review surveys scholarly articles, books, and other sources relevant to your particular area of research. It creates a "landscape" for the reader, giving them a full understanding of the developments in the field.
V. Data description and model estimation. Discuss your data and data sources. Make sure you present the summary statistics of your variables (for example, number of observations, mean, standard deviation, minimum, maximum) clearly in a table (do not use a screenshot from R). Next, you should use the techniques developed in class to analyze your data and determine whether the variable of interest is stationary. Then find the best fitting model to forecast the stationary version of your variable. Next, you will have to assess the accuracy of your forecasts. You will use the techniques you have learned in the class.
VI. Conclusion. Review the major findings as well as possible

Late Submission Policy:

Due dates for every assignment are provided on the course syllabus and course schedule (and posted in Canvas). Unless otherwise stated, assignments are due on those days. However, I recognize that sometimes "life happens." In these instances, you may use your allotted one flex day. These days allow you to submit an assignment up to one day late without penalty. You can use this day for any assignment and for any reason. You do not need to provide me with the reason: simply email me and tell me you would like to use your flex day.

Once you've exhausted your flex day, then point deductions will occur for any assignment submitted after the deadline. An assignment submitted 24 hours of the due date will only be eligible for 80% of the maximum number of points allotted. Assignments submitted more than 24 hours after the due date will not be accepted. If you experience extenuating circumstances (e.g., you are hospitalized) that prohibit you from submitting your assignments on time, please let me know. I will evaluate these instances on a case-by-case basis.

Classroom Protocol

While this is an online class, students are encouraged to interrupt and ask questions.
If you experience any difficulty in this course, please do not hesitate to come to me for help. I am available during office hours and by appointment. However, I greatly appreciate questions asked during class – I guarantee that if you have a question, many of your classmates have the same question in mind as well.

University Policies

Dropping and Adding

Econ 138-01/ Business and Economic Forecasting, Spring 2022

Week	Date	Topics, Readings, Assignments, Deadlines