



ALBERS

SCHOOL OF BUSINESS
AND ECONOMICS

Forecasting Business Condition ECON 4120 | 5 credit hours
Winter 2021
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COURSE DESCRIPTION

Forecasting is an important activity that firms, consumers, and government organizations engage in to plan for the future. This course introduces classical time-series models and forecasting techniques. We will cover stationary linear models: AR, MA, and ARMA as well as non-stationary linear models: unit roots and study how to estimate parameters of these models, make forecasts and evaluate forecasts. You will apply these techniques to real-life data using the statistical software R. After successful completion of this course, you should be able to make quality forecasting using a suitable empirical model based on data, and evaluate the performance of your forecasting using in-sample and out-of-sample data.

LEARNING OUTCOMES

“Statistical thinking will one day be as necessary for efficient citizenship as the ability to read and write.”

-Samuel S. Wilks (1950) paraphrasing H.G. Wells (1903)

On successful completion of this course (i.e. by passing this course), you will be able to

1. Understand time-series models and forecasting techniques
2. Make a quality forecasting using a suitable empirical model based on data
3. Evaluate the performance of your forecasting using in-sample and out-of-sample data.
4. Apply these techniques to real-life data using the R packages
5. Present results in an accurate, clear, and audience-appropriate manner

TEXTS, MATERIALS, and PREREQUISITES

- The text for the course is Forecasting for Economics and Business by Gloria González-Rivera. ISBN-13: 978-0131474932 or ISBN-10: 0131474936.
- Software: R will be used in the lecture and your assignments. R is a popular free software language that statisticians and data analysts use to develop statistical software and conduct data mining. There are many online tutorials, manuals, or guides for using R. I will provide some instructions, sample R codes, and practice problems. You are not required to know R before the class and you are not going to be evaluated on your R coding skills, but it is necessary for you to acquire some R coding skills during the course to complete assignments.

EVALUATION AND OVERVIEW OF ASSIGNMENTS

Assignment	Points
Muddiest Point Discussion	10
Reflection	10
External Resources	20
Problem Sets	30
Group Assignments	30
Total Points	100

Point scale	Letter grade	Point scale	Letter grade
94 – 100	A	73 – 76	C
90 – 93	A-	70 – 72	C-
87 – 89	B+	67 – 69	D+
83 – 86	B	63 – 66	D
80 – 82	B-	60 – 62	D-
77 – 79	C+	59 and below	F

The points for Muddiest Point Discussion are earned by your turning in a few lines of the “muddiest point” after wrestling with readings and practice problems. This is a required assignment. You earn completion credit by either asking questions or answering your classmates' questions.

Reflection ties your weekly learning to your personal experience and growth.

There are many good online resources for the topics we cover in this course, so I invite you to contribute and comment on external online resources to better understand the concept/topic of the week.

Problem sets provide you opportunities to apply methods and solve real-world problems by using statistical software.

Group projects provide real-life scenario assignments that require you to apply what you have learned. To complete the projects, you need to collaborate with your team members and provide peer review to other groups.

All course material and assignments are communicated on Canvas.

COURSE OUTLINE

Tentative Course Schedule* (All assignment due dates are on Canvas)

Date	Readings	Topics
Week1	Chapter 1&2	Introduction and Context
Week2	Chapter 3	Statistics and Time Series
Week3	Chapter 4	Tools of the Forecaster (a priori for the forecaster)
Week4	Chapter 6	Forecasting with Moving Average(MA)Processes
Week5	Chapter 7	Forecasting with Autoregressive (AR)Processes
Week6		Catchup and midterm review
Week7	Chapter 10	Forecasting the long term: Deterministic and Stochastic Trends
Week8	Chapter 8	Forecasting Practice I (a posteriori for the forecaster using in-sample data)
Week9	Chapter 9	Forecasting Practice II (a posteriori for the forecaster using out-of-sample data)
Week10		Catchup and final review

*Your learning is my primary concern in this course, so I may modify the schedule if, for instance, we discover we need to spend time on a certain topic and less on another.

COURSE POLICIES

INSTRUCTION METHOD

Instructional methods this quarter will be experimental! The course will be conducted **synchronously** in the sense that we will meet as a class once a week for an hour between 4:00 pm - 5:00 pm every Wednesday. Your attendance is required. I will use our class time to answer your questions and practice problems. These meetings will be recorded.

In our zoom meetings, please keep your video and audio on during the entire meeting time, which makes it easier for us to connect and communicate. If you need to temporarily turn off the video, please feel free to do so. If you have any concerns about this, please inform me. You should turn off your audio if you have background noise.

Most of the course content will be delivered **asynchronously**. Each week, you will be introduced to new topics through readings and videos. A word of caution, although asynchronous learning happens at a time to suit your schedule, this is not a self-paced study. The course assignments have rigid deadlines and we move at a steady pace.

Remember, too, that if you are having technical problems, you may be able to borrow a Chromebook or internet hotspot from the Library. (See “Academic resources” below or go straight to <https://seattleu.instructure.com/courses/1563070>)

I will regularly ask for your feedback on how the class format is working for you. Expect there to be a few changes as the quarter progresses; in any changes, I will be putting your learning first.

OFFICE HOURS

Office hours are a chance for you to meet with me one-on-one or in small groups to discuss the course, your learning, your plans for the future, or just to check-in. We’ll be holding office hours via Zoom. I have set up both one-on-one consultation time and drop-in hours on Canvas. Feel free to come in anytime during my drop-in office hours. You are also welcome to sign up for one-on-one consultation time with me. I’ve set up a waiting room to ensure you receive my full attention during your time slot – and to maintain your privacy.

COMMUNICATIONS

Most of our communication will be conducted on Canvas. I will make an announcement on Canvas whenever I have information to share with the class. Please check announcements regularly.

I encourage you to send me an email with any questions and concerns. I prefer canvas email to SU email because during the school year I check canvas email more frequently than my regular SU email. Also, the canvas email identifies which class the email comes from and I can not discuss grades over the regular SU email because of FERPA. If you send an email to my regular SU email, sxie@seattleu.edu, please use Course Code: <your email subject> as the subject.

Please be polite and considerate in all email communications. I prefer to be addressed by my last name. I will do my best to respond to you within 24 hours. This response may come in the form of an email directly back to you or, if the answer would be beneficial to the entire class, I will make an announcement on Canvas.

INTERNET ACCESS

We will use a variety of online applications to communicate and collaborate. As such, you will need a reliable, high-speed Internet connection for the duration of this course. If you are traveling to countries such as China, Vietnam, Saudi Arabia, Iran, Burma, and others, some content in this course may be blocked. Please contact me immediately if you will be traveling to a country that may block Internet access during any portion of this class.

ASSIGNMENT DEADLINES AND EXTENSIONS

This is not a self-paced course. You have deadlines to meet every week. Please pay close attention to all deadlines. You are expected to turn in work on time. If work is submitted late, the instance will result in a penalty of 20% for every day of delay until it becomes zero after five days.

I plan to return your assignments as soon as possible after you have submitted them. Faster feedback means you're more likely to remember what you wrote and can more easily take the feedback on board for the next assignment. The assignments in this course build on one another so that the feedback process is an important part of the learning.

It would greatly help the learning process if you can submit your assignment by the stated deadlines. However, these are not normal times! If you find that you are unable to complete an assignment on time, *please communicate with me*. I do understand that things are difficult right now. I'll do my best to be flexible; for that to happen, we need to keep in dialogue so that I know where you are in your learning and how I can best support you.

To help keep yourself on track, I strongly encourage you to plan ahead. To help you better plan your time, I have published the whole quarter's course on canvas. Keep in mind, some assignments are not completely written yet at the beginning of the quarter and some may change. By default, course material goes alive every Monday morning.

Check the assignments on canvas to see when assignment briefing will be given and when assignments are due. This enables you to block out time in your calendar now so that you know when you will be working on assignments for this course. Try to give yourself a little more time than you normally would; we all know it could be a bumpy time outside the course!

An agreement to receive an Incomplete (I) grade may be negotiated if your circumstances do not allow you to finish the course on time. The Incomplete Grades Policy of the university is available on the Office of the Registrar web site: <https://www.seattleu.edu/redhawk-axis/academic-policies/>

ACADEMIC RESOURCES

My goal is to create a learning environment in which you can be successful and feel supported. I will work hard to create and improve the learning environment throughout the quarter based on my observations of the course and your feedback on what would help you learn more. In return, I ask and encourage you to make the most of this learning opportunity. As we are using a remote learning format, you may find that some of your previously successful strategies in face-to-face and on-campus settings are less suited to this environment. I encourage you to explore the services below and to work on the assumption that in this quarter, you'll be developing some new strategies that will help you become a more flexible learner. I am keen to support you in that growth and plan to build in opportunities for us all to share new strategies either in scheduled class time or via a Canvas chat.

SUPPORT FOR REMOTE LEARNING

Remember to review the online tutorial that our Center for Digital Learning and Innovation has created to support your remote learning experience: <https://seattleu.instructure.com/courses/1563070>

Students and faculty have reported a more engaging class experience when using video on Zoom. We know not everyone has the ability to have their camera on all the time, for a variety of reasons. If you aren't able to do so, be sure to stay connected in other ways (in chat or vocally).

BORROW A CHROMEBOOK OR AN INTERNET HOTSPOT FROM THE LIBRARY

If you are having difficulty with remote learning because your laptop is older or your internet access is patchy, the Library is currently loaning out Chromebooks and internet hotspots. You can submit a request at the following link: https://seattleu.qualtrics.com/jfe/form/SV_9Bjo8RxYefZVeJv

LIBRARY AND LEARNING COMMONS

<http://www.seattleu.edu/learningcommons/>

Writing Center

Given that the University has moved to online classes, the Writing Center is offering online appointments through asynchronous and synchronous options. Please visit <https://www.seattleu.edu/writingcenter/online-consultations/> to learn more about the online consultations or schedule an appointment through <https://seattleu.mywconline.com>

Learning Assistance Programs

Learning Assistance Programs (LAP) provides peer tutoring, facilitated study groups, and learning strategy development through scheduled workshops and individual consultation sessions with a learning specialist. Given that the University has moved to online classes, LAP will only be offering services remotely. Please visit our website <https://www.seattleu.edu/learning-assistance/> or e-mail us at learningassistance@seattleu.edu for the most updated information about accessing services.

Research Services

Research help is available to students at any stage in the research process. Students can schedule a virtual consultation with our team of Research Services Librarians and Student Peer Research Consultants (SPRCs) to get help finding and assessing sources, learn database search skills, and develop research topics.

To learn more, or for assistance via chat/phone/email, check out our Get Research Help page (<https://www.seattleu.edu/library/get-research-help/>) or book a Virtual Consultation online (<https://www.seattleu.edu/library/consultation/>).

Math Lab

The Math Lab offers one-on-one tutoring to students enrolled in lower division mathematics courses. Please visit our website at <https://www.seattleu.edu/scieng/math/student-resources/math-lab/> for

more information.

English-language learning center (ELLC)

The English Language Learning Center (ELLC) offers free tutoring for all SU students who are non-native speakers of English. Experienced ELLC tutors can help you improve your English language skills and better understand American culture. We can help with any type of assignment: written essays, online discussions, oral presentations, interview practice, etc. For the schedule or to book a session please visit <https://www.seattleu.edu/ellc/ellc-tutoring/>

Academic integrity tutorial

<https://www.seattleu.edu/academic-integrity/resources-for-students/>

UNIVERSITY POLICIES

SUPPORT FOR STUDENTS WITH DISABILITIES

Seattle University values diverse types of learners and is committed to ensuring that each student is afforded an equal opportunity to participate in learning experiences. For disability and other learning-related needs and accommodations that you have already arranged via Disability Services, please communicate with me during the first week of class through email or Zoom. Should concerns arise at any point in the quarter, please let me know as soon as possible.

If you have, or think you may have, a disability (including an “invisible disability” such as a learning disability, a chronic health problem, or a mental health condition) that interferes with your performance as a student in this class, but have not yet arranged support services and/or accommodations, I encourage you to do so through Disability Services staff at DS@seattleu.edu or (206) 296-5740. Disability-based adjustments to course expectations can be arranged only through this process. I am committed to working with you, so please do not hesitate to contact me.

NOTICE ON RELIGIOUS ACCOMMODATIONS

It is the policy of Seattle University to reasonably accommodate students who, due to the observance of religious holidays, expect to be absent or endure a significant hardship during certain days of their academic course or program. Please see, Policy on Religious Accommodations for Students (<https://www.seattleu.edu/media/policies/Policy-on-Religious-Accommodations-for-Students---FINAL.PDF>).

ZOOM MEETING NORMS

During our Zoom meetings, we will jointly create course norms (or “agreements”) to which we will all abide so that we have the most productive and positive remote learning environment. In face-to-face classes, regular examples have included that we agree to:

- Start and end on time
- Come to meeting prepared
- Participate actively in discussion
- Show one another courtesy, including when we disagree.

Given our circumstances this quarter, we will revisit these norms regularly to focus on what works for our learning together, including norms for sessions via Zoom and norms for online discussions.

MEETING RECORDING

Zoom meetings of this course may be recorded. Any recordings will only be available to students registered for this class. Recordings may not be reproduced, shared with those not in the class, or uploaded to other online environments.

ACADEMIC POLICIES ON THE REGISTRAR WEBSITE

<https://www.seattleu.edu/redhawk-axis/academic-policies/>

Be sure that you understand the following university academic policies, posted on the Registrar's website:

- [Academic Integrity](#)
- [Academic Grading Grievance Policy](#)
- **Support for Students with Disabilities**

If you have, or think you may have, a disability (including an "invisible disability" such as a learning disability, a chronic health problem, or a mental health condition) that interferes with your performance as a student in this class, you are encouraged to arrange support services and/or accommodations through Disabilities Services staff located in Loyola 100, (206) 296-5740. Disability-based adjustments to course expectations can be arranged only through this process.
- **Office of Institutional Equity**

Title IX of the Education Amendments of 1972 (Title IX) prohibits discrimination based on sex in educational programs or activities that receive Federal financial assistance. This prohibition includes sexual misconduct, which encompasses sexual harassment and sexual violence. Seattle U remains committed to providing a safe and equitable learning, living, and working environment. Seattle U offers emergency, medical, and other support resources, as well as assistance with safety and support measures, to community members who have experienced or been impacted by sexual misconduct.

Seattle U requires all faculty and staff to notify the University's Title IX Coordinator if they become aware of any incident of sexual misconduct experienced by a student.

For more information, please visit <https://www.seattleu.edu/equity/>. If you have any questions or concerns, you may also directly contact the Title IX Coordinator in the Office of Institutional Equity by email: oie@seattleu.edu or phone: (206) 296-2824.