COURSE INFORMATION

Course title:	Forecasting and Time Series Prediction		
Course code:	BABS 502	Credits:	1.5
Session, term, period:	2020W2, Period 4	Class location:	online
Section(s):	BA1	Class times:	Mon/Wed 10am-12pm
Course duration:	Apr. 19, 2021 to May 29, 2021	Pre-requisites:	BABS 507, BABS 508
Division:	Operations and Logistics	Co-requisites:	N/A
Program:	MBAN		

INSTRUCTOR INFORMATION

Instructor:	Martha Essak, M.Sc.		
Phone:	778-819-8368	Office location:	online
Email:	martha.essak@sauder.ubc.ca	Office hours:	Mon/Wed 12-1pm

COURSE DESCRIPTION

Forecasting is an integral part of decision-making activities. Organizations define goals, seek to predict environmental factors, and then take actions that they hope will result in the achievement of these goals. Forecasting allows organizations to decrease their dependence on chance and become more scientific in dealing with their environments. Today, forecasting rests on solid theoretical foundations while also having a realistic, practical base that increases its relevance and usefulness to organizations.

This course covers the full range of major forecasting methods, providing a complete description of their essential characteristics and presenting the steps needed for their practical application, while avoiding getting bogged down in the theoretical details that are not essential to understanding how the various methods work. It provides a systematic comparison of the advantages and disadvantages of various methods so that the most appropriate method can be selected for each forecasting situation.

COURSE FORMAT

Class time will consist of lectures, discussions and activities. Students will complete readings, quizzes, homework assignments, and the project outside of class time.

LEARNING OBJECTIVES

This course will:

1. Introduce students to basic forecasting concepts and to major forecasting methods.
2. Teach students a structured and objective approach to forecasting.
3. Enable students to use forecasting to address different business problems.

At the end of the course, students will be able to:

1. Appreciate the key role that forecasting plays in organizational decision-making.
2. Understand and effectively apply the full range of major forecasting methods used in practice, and appreciate their strengths and weaknesses in view of their practical application.
3. Use forecasting to derive managerial insights relevant to the intended application.
4. Use and interpret output from statistical software, and critique and interpret forecasts prepared by others.

ASSESSMENTS

Summary

Component	Weight
Assignments	40%
Project	40%
Quizzes	10%
Professionalism and participation	5%
Judgmental forecasting class project	5%
Total	100%

Details of Assessments

Homework Assignments

Students will work **individually** to solve the problems in the homework assignments. Late submissions will not be accepted and will receive a zero. Homework assignments should be handed in electronically via the UBC Canvas system. Assignments will be graded on correctness and clarity.

Project

Students will work **in pairs** on a project (in report form) that uses the techniques learned throughout the course. **You may not work with classmates outside your pair or obtain outside help**. Please consult with the instructor if you need help or clarification.

Quizzes

Students will work **individually** on the quizzes, which are designed to be completed after you have finished the readings about the relevant material.

Professionalism and participation

Professionalism and participation will be assessed based on: punctuality, preparation for class, participation in class activities, contribution to class discussions, and interaction with peers and the instructor.

Judgmental forecasting class project

This is a project that will be completed by the entire class. Each group will be graded on their contribution to the class project.

LEARNING MATERIALS

Required Reading Materials: "Forecasting: Principles and Practice, 2nd edition" by Hyndman and Athanasopoulos (2018). This text is available for free online at https://otexts.com/fpp2/
Readings are indicated in the course schedule.

Technology Requirements: Computer installed with R, RStudio, Microsoft Excel, and Anaconda (Jupyter Notebook).
R: http://www.r-project.org
RStudio: http://rstudio.org/download/

Estimated cost of required materials: $0
Additional materials recommended but not required: N/A

COURSE-SPECIFIC POLICIES AND RESOURCES

Missed or late assignments, and regrading of assessments

Late submissions will not be accepted and will receive a grade of zero.

Academic Concessions

If extenuating circumstances arise, please contact the RHL Graduate School program office as early as reasonably possible, and submit an Academic Concession Request & Declaration Form https://webforms.sauder.ubc.ca/academic-concession-rhlee. If an academic concession is granted during the course, the student will be provided options by RHL, or by the instructor in consultation with RHL, per UBC's policy on Academic Concession.

Code Plagiarism

Code plagiarism falls under the UBC policy for Academic Misconduct. Students must correctly cite any code that has been authored by someone else or by the student themselves for other assignments. Cases of "reuse" may include, but are not limited to:

- the reproduction (copying and pasting) of code with none or minimal reformatting (e.g., changing the name of the variables)
- the translation of an algorithm or a script from a language to another
- the generation of code by automatic code-generations software

An "adequate acknowledgement" requires a detailed identification of the (parts of the) code reused and a full citation of the original source code that has been reused.
Students are responsible for ensuring that any work submitted does not constitute plagiarism. Students who are in any doubt as to what constitutes plagiarism should consult their instructor before handing in any assignments.

POLICIES APPLICABLE TO COURSES IN THE ROBERT H. LEE GRADUATE SCHOOL

Attendance

Excepting extenuating circumstances, students are expected to attend 100% of their scheduled class hours. Absent students limit their own academic potential, and that of their classmates, and cause unnecessary disruption to the learning environment. Students missing more than 20% of the total scheduled class hours for a course (including classes held during the add/drop period) without having received an academic concession will be withdrawn from that course. Withdrawals, depending on timing, could result in a "W" or an "F" standing on the transcript.

Punctuality

Students are expected to arrive for classes and activities on time and fully prepared to engage. Late arrivals may be refused entry at the discretion of the instructor or activity lead. Students arriving later than halfway through a scheduled class will be treated as absent for that class.

Electronic Devices

During online lectures, students are not permitted to use any electronic devices other than the primary one used for attending the online lecture (e.g. laptop or desktop). Only Zoom should be open during the online lecture unless an instructor advises the use of another program/website for an in-class activity. Feedback from students indicates that personal devices are the number one distraction from effective learning and participation in the online learning environment.

Citation Style

Please use the American Psychological Association (APA) reference style to cite your sources.

Details of the above policies and other RHL Policies are available at:
http://www.calendar.ubc.ca/vancouver/index.cfm?tree=12,199,506,1625

UNIVERSITY POLICIES AND RESOURCES

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available on the UBC Senate website at https://senate.ubc.ca/policies-resources-support-student-success.

Respect for Equity, Diversity, and Inclusion

The UBC Sauder School of Business strives to promote an intellectual community that is enhanced by diversity along various dimensions including status as a First Nation, Metis, Inuit, or Indigenous person, race, ethnicity, gender identity, sexual orientation, religion, political beliefs, social class, and/or disability. It is critical that students from diverse backgrounds and perspectives be valued in and well-served by their courses. Furthermore, the diversity that students bring to the classroom should be viewed as a resource, benefit, and source of strength for your learning experience. It is expected that all students and members of our community conduct themselves with empathy and respect for others.

Academic Integrity

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the breakdown of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating may result in a mark of zero on the assignment or exam and more serious consequences may apply if the matter is referred to the President's Advisory Committee on Student Discipline. Careful records are kept in order to monitor and prevent recurrences.

Academic Freedom and Students Studying from Outside Canada

During this pandemic, the shift to online learning has greatly altered teaching and studying at UBC, including changes to health and safety considerations. Keep in mind that some UBC courses might cover topics that are censored or considered illegal by non-Canadian governments. This may include, but is not limited to, human rights, representative government, defamation, obscenity, gender or sexuality, and historical or current geopolitical controversies. If you are a student living abroad, you will be subject to

the laws of your local jurisdiction, and your local authorities might limit your access to course material or take punitive action against you. UBC is strongly committed to academic freedom, but has no control over foreign authorities (please visit http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,33,86,0 for an articulation of the values of the University conveyed in the Senate Statement on Academic Freedom). Thus, we recognize that students will have legitimate reason to exercise caution in studying certain subjects. If you have concerns regarding your personal situation, consider postponing taking a course with manifest risks, until you are back on campus or reach out to your academic advisor to find substitute courses. For further information and support, please visit: http://academic.ubc.ca/support-resources/freedom-expression

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All materials of this course (course handouts, lecture slides, assessments, course readings, etc.) are the intellectual property of the instructor or licensed to be used in this course by the copyright owner. Redistribution of these materials by any means without permission of the copyright holder(s) constitutes a breach of copyright and may lead to academic discipline and could be subject to legal action. Any lecture recordings are for the sole use of the instructor and students enrolled in the class. In no case may the lecture recording or part of the recording be used by students for any other purpose, either personal or commercial. Further, audio or video recording of classes are not permitted without the prior consent of the instructor. Students may not share class Zoom links or invite others who are not registered to view sessions.

ACKNOWLEDGEMENT

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xʷməθkʷəy̓əm (Musqueam) people, who for millennia have passed on their culture, history, and traditions from one generation to the next on this site.

ONLINE TEACHING TOOL & REQUIREMENTS

This course will be taught using Zoom for synchronous classes and office hours.

COURSE SCHEDULE

(Subject to change with class consultation)

Class	Date	Topic	Readings or Activities	Assessments due
1	Apr. 19	Course Overview, Introduction to Forecasting	Ch. 1 – 4	Pre-lecture Quiz #1 due at 8am
2	Apr. 21	Basic Forecasting Methods		
3	Apr. 26	Time Series Decomposition	Ch. 6	Pre-lecture Quiz #2 due at 8am
4	Apr. 28	Time Series Decomposition		**Assignment #1**: Basic Forecasting methods Due Date: Tuesday Apr. 27 at 11:59pm
5	May 3	Exponential Smoothing Methods	Ch. 7	Pre-lecture Quiz #3 due at 8am
6	May 5	Exponential Smoothing Methods		**Assignment #2**: Time Series Decomposition Due Date: Tuesday May 4 at 11:59pm
7	May 10	ARIMA Models	Ch. 8	Pre-lecture Quiz #4 due at 8am
8	May 12	ARIMA Models		**Assignment #3**: Exponential Smoothing Methods Due Date: Tuesday May 11 at 11:59pm
9	May 17	Simple and Multiple Regression	Ch. 5	
10	May 19	Simple and Multiple Regression		**Assignment #4**: ARIMA models Due Date: Tuesday May 18 at 11:59pm
	May 24-28	Final exam week		**Final project deadline TBA**