

The Grove City College, Department of Management & Marketing
MNGT 512 Forecasting Models

**** This is a sample syllabus and is subject to change. ****

Term: Fall 2022	Instructor: Dr. John Smith
Credit Hours: 3	Email: SmithJD@GCC.edu
Course Section / Meeting Time: MNGT 512A Mon 6:00 – 7:30 PM	Office Hours: MWF 10:00–11:00AM, WF 1:00–2:00 PM, TR 9:30–10:45AM, M 4:00–5:30 PM
Office phone: 724-458-2195 (office) Cell phone: 216-965-2721	Office: HAL Room 318E Box: 3195

Course Catalog Description: MNGT 512. FORECASTING MODELS. An introduction to creating, solving, analyzing, and interpreting real-world time-series and forecasting models. Topics include linear, autoregressive, moving average and other forecasting and time-series techniques, transfer functions, multivariate model building, stationary, and nonstationary techniques. Applications include all areas where forecasting is required including transportation, finance, scheduling, networks, and supply chains. All models will be developed using R and R Script.

Course Purpose: The purpose of this course is to provide students with the appreciation and knowledge on how to analyze and illustrate forecasting data in multiple contexts. The use of the R programming language and the RStudio user interface will be utilized as the exclusive analytical tool for this course.

Note: This course assumes the student already has a solid background knowledge of discrete and continuous distributions as well as a strong understanding of descriptive statistics in the areas of central tendency and dispersion. The course will build upon knowledge obtained in previous courses for analyzing data sets, making inferences, and developing appropriate models.

Class Process: As with other online courses, you are governor of your time and effort needed to complete your work within the course schedule, outlined below. As a graduate student, you are expected to read the material, watch pertinent videos, complete assignments on time and participate within the class structure (in class and on discussion boards). All materials will be available through our course Teams site.

There will be at least one weekly synchronous class meeting to review key concepts for the week and answer questions. This class will be recorded using Microsoft Teams for anyone not available. Students are also asked to attend the final case study project presentations virtually at the end of the semester. Students will be asked to rate the presentations of their fellow students. Otherwise, follow the general schedule provided below.

Course Materials: The course will be supplemented with video recordings of essential theory and illustrations on how to solve problems related to the topic. PowerPoint slides will be available to supplement each textbook chapter. Solutions to examples problems will also be provided to aid in your studies.

Required Text: Hyndman, Rob J and Athanasopoulos, George. Forecasting: Principles and Practice (3rd Edition), <https://otexts.com/fpp3/>

Additional Course Tools: Excel and R/RStudio

R: R is a powerful free open source software language that offers a wide range of statistical and graphical techniques. It is ideal for a course in evaluating statistical forecasting models. You will need to download R and R Studio to your laptop. Instructions will be provided on our Teams course page.

1. The open source R Programming language. Can be downloaded at

a. <https://cran.r-project.org/mirrors.html>

2. Rstudio. Can be freely downloaded at <https://www.rstudio.com/products/rstudio/download/> Note: Be sure to download the latest version of each

COMPUTER & SUPPORT

Computer Use:

Students will utilize their computers to access all course material, work on practice problems as well as complete quizzes and exams. Access to Microsoft Excel and PowerPoint is also required.

Support:

The course professor will be available during posted office hours. In addition, professor will be available online each day to answer questions and provide guidance where needed.

GCC BUSINESS DEPARTMENT

GCC Master Business Analytics Student *Program Learning Outcomes*

Learning Outcomes

1. Graduates will demonstrate the ability to think critically in making decisions based on data and the resultant analytical models.
2. Graduates will acquire the written, verbal, and graphical skills necessary to effectively communicate with technical and non-technical business environment.
3. Graduates will demonstrate a command of the ethical standards of business analytics and business in general.
4. Graduates will demonstrate a deep understanding of the current issues that impact businesses operating in a global environment, including cultural challenges facing the business.
5. Graduates will demonstrate mastery of the descriptive, predictive, and prescriptive modeling of complex business problems.
6. Graduates will demonstrate the ability to translate business models into effective business action.

Course Learning Outcomes:

	MNGT 512 Course Learning Outcomes	Assessment	Business Program Learning Outcomes
C1	Demonstrate ability to utilize R as a primary analysis tool for analyzing data sets to support forecasting analysis.	Case studies	5
C2	Demonstrate the ability to select the correct forecasting method based upon its purpose and properly interpret the accuracy of the model.	Homework and case studies	1, 5
C3	Demonstrate ability to communicate results of statistical analyses in an effective manner	Case studies	2

C4	Demonstrate understanding of ARIMA models and their proper applications	Homework and case studies	1, 5
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GRADE DETERMINATIONS

Your final grade in this course will be based the following weighting of activities, as shown in this table.

Activity	Weight	Covering	Tentative Due by Date
Homework	30%	Each assigned chapter	Refer to schedule below
Collaboration	20%	Relevant Topics	As assigned
Case Study 1	20%	Relevant Topics	Refer to schedule below
Final Project	30%	All chapters	Refer to schedule below
Totals	100%		

The dates listed are subject to change.

Homework: Homework assignments will consist of problems to be solved using the R language. All assignments are available on the textbook website. Assignments are to be turned into the Team’s assignment page.

Collaboration: Questions will be posed to the class in a discussion board. Students are expected to consider the question and provide responses that increase class knowledge, further the discussion and illustrate their knowledge of the subject. A total of 9 points are available each week. 6 points will be earned for an appropriate initial posting. 3 points will be earned for an appropriate reply to a classmate’s post.

In addition, students are asked to participate in viewing their peer’s final project presentation and grading their performance. If unable to participate in the live meeting room, the student will need to watch the video recording and grade the presentations within 24 hours of the live event. But live attendance is preferred.

Case Studies/ Projects: There will be at least two (2) group case studies / projects assigned during the semester. Teams will evaluate datasets, complete appropriate analyses, summarize results in a report. The second case project is sponsored by an organizational partner willing to support the course. Student teams will present their results to this organization in a live web conference.

Student Initiative: As a graduate level student, students are expected to read ahead of the class, complete assignments on time and participate within the class structure (in class and on discussion boards).

Grading Scale for the Course: The course letter grade submitted to the Registrar’s Office will be determined as follows:

A+	= 97.0 – 99.9	A	= 93.0 - 96.9	A-	= 90.0 – 92.9
B+	= 87.0 – 89.9	B	= 83.0 – 86.9	B-	= 80.0 – 82.9
C+	= 77.0 – 79.9	C	= 73.0 – 76.9	C-	= 70.0 – 72.9

A final course grade of “Incomplete” will be assigned to any student who does not complete all exams.

COVID Policy

Students showing any symptoms related to COVID-19 should not attend class in person. Instead, they should report their condition through the College’s COVID-19 portal, wait for instructions from the Zerbe Health and Wellness Center, and not return to class in-person until cleared to do so. During this time, every effort will be made to provide remote learning opportunities. If a student’s name does not appear in the COVID-19 portal, faculty are

not required to record their lectures or make any other accommodation to make up missed classes or labs. These policies may be subject to change if doing so is in the best interest of the health and safety of the campus community.

Disability: (This is reprinted from the College Bulletin.)

Students requesting accommodations for a disability are required to submit documentation of a disability to verify eligibility under the Americans with Disabilities Act of 1990 (ADA). A disability is defined by the ADA as a substantial limitation of a major life function. Once a student is accepted and has confirmed his/her intention to attend Grove City College, he/she must initiate a request for services by contacting the Disabilities Service Coordinator at ARC@gcc.edu or 724-264-4673. Reasonable and appropriate accommodations are determined on a case-by-case basis for qualified students who have demonstrated a need for these services.

ACADEMIC INTEGRITY POLICY (revised spring 2020)

Preamble: Grove City College is deeply invested in upholding academic integrity and honesty. Three of the college's five core values, faithfulness, excellence, and community, directly relate to academic integrity because any violation of academic integrity is a form of theft and deceit that affects the one stolen from, as well as the community of students and faculty at the college. In addition, cheating is a violation of three of the Ten Commandments: the prohibitions against stealing, lying, and coveting. However, as the Ten Commandments and the totality of Scripture demonstrate to us, we are fallen creatures who at times do what we ought not do.

Accordingly, the college has created a policy both to define what cheating is and to describe our process for dealing with allegations of cheating in order to discourage cheating and provide an opportunity for meaningful repentance and restoration when students do cheat.

Refer to the policy for definitions on cheating and plagiarism

Please consult the *Academic Integrity Policy* in the Grove City College Bulletin for more information and definitions on cheating and plagiarism.

INTENDED COURSE SCHEDULE

It is important that you keep up to date with the class schedule and homework as it may change due to class progress. This schedule is meant as a guide to illustrate the pace with which material is covered. It is not intended to imply dates for synchronous classes.

Wk	Class Date	Class Topic	Class Topic & Assignments
1	Mon 8/22	Ch 1 Introduction	
2	Mon 8/29	Ch 2 Time Series Graphics	Ch 1 HW #1, 2 due 8/29
3	Mon 9/5 Tues 9/6	Labor Day Break Ch 3 Time Series Decomposition	Ch 2 HW #1, 3, 9, 10, 12 due 9/7
4	Mon 9/12	Ch 4 Time Series Features	Ch 3 HW #2, 3, 8, 9 due 9/15.
5	Mon 9/19	Ch 5 Forecaster's Toolbox	Ch 4 HW #2, 3 due 9/20 due 9/20
6	Mon 9/26	Ch 5 Forecaster's Toolbox	Case study 1 due 9/27
7	Mon 10/3	Ch 7 Time Series Regression Models	Ch 5 HW #1, 4, 6, 10, 12 due 10/4
8	Mon 10/10	Ch 8 Exponential Smoothing Fall Break on 10/13-14	Ch 7 HW #2, 5, 6 due 10/11
9	Mon 10/17	Ch 8 Exponential Smoothing	

10	Mon 10/24	Ch 9 ARIMA	Ch 8 HW #1, 2, 3, 5, 11, 13, 14 due 10/25
11	Mon 10/31	Ch 9 ARIMA	
12	Mon 11/7	Ch 10 Dynamic Regression Models	Ch 9 HW #1, 2, 5, 7, 9, 13,16 due 11/8
13	Mon 11/14	Ch 10 Dynamic Regression Models	
14	11/21 week	<i>Thanksgiving Recess</i>	Ch 10 HW #2, 4, 7 due 11/22
15	11/28 week	Final Project Report Outs	

Notes:

1. Synchronous class meetings may be rescheduled to accommodate the class as a whole.
2. **This syllabus and the course requirements may be changed at the discretion of the instructor to better meet the needs of this course.**

SAMPLE