



## UNSW Course Outline

# ECON2209 Business Forecasting - 2024

Published on the 28 Jan 2024

## General Course Information

Course Code : ECON2209

Year : 2024

Term : Term 1

Teaching Period : T1

Is a multi-term course? : No

Faculty : UNSW Business School

Academic Unit : School of Economics

Delivery Mode : In Person

Delivery Format : Standard

Delivery Location : Kensington

Campus : Sydney

Study Level : Undergraduate

Units of Credit : 6

### Useful Links

[Handbook Class Timetable](#)

## Course Details & Outcomes

### Course Description

This course covers the practical use of econometric and statistical techniques applied in the business world. Building and evaluating forecasting models using time series data will be the focus of this course. Understanding these issues will allow students to formulate and use

reliable forecasting models based on sound economic principles.

## Course Aims

This course is offered as part of the economics/econometrics stream in the BCom and BEc degrees. It aims to provide a foundation in business forecasting analyses based on econometric methods. Reliable long-term demand forecasts are essential input to the formulation of business plans in capital-intensive and price-regulated industries such as electricity, gas and water supply industries. This course is a prerequisite of ECON3206 Financial Econometrics.

Prerequisite: ECON1203 or COMM1110 or MATH1041 or MATH1231 or MATH1241 or MATH1251. It is highly recommended that students who complete COMM1110 also complete COMM1190 before enrolling in this course.

## Relationship to Other Courses

This course is offered as part of the economics/econometrics stream in the BCom and BEc degrees. It aims to provide a foundation in business forecasting analyses based on econometric methods. Reliable long-term forecasts are an essential input into many decisions relevant to businesses, including being an input into government policy decisions and planning. This course is a prerequisite of ECON3206 Financial Econometrics.

Presumed knowledge

Pre-requisite: ECON1203 or COMM1110 or MATH1041 or MATH1231 or MATH1241 or MATH1251. It is highly recommended that students who complete COMM1110 also complete COMM1190 before enrolling in this course.

## Course Learning Outcomes

Course Learning Outcomes	Program learning outcomes
CLO1 : Explain various notions/concepts/principles in time series analysis and forecasting.	<ul style="list-style-type: none"><li>• PL01 : Business Knowledge</li><li>• PL03 : Business Communication</li></ul>
CLO2 : Choose and use standard techniques of time series analysis to analyse real data, and build appropriate forecasting models.	<ul style="list-style-type: none"><li>• PL01 : Business Knowledge</li><li>• PL02 : Problem Solving</li><li>• PL03 : Business Communication</li></ul>
CLO3 : Review and interpret modelling and forecasting results critically.	<ul style="list-style-type: none"><li>• PL02 : Problem Solving</li><li>• PL03 : Business Communication</li><li>• PL05 : Responsible Business Practice</li></ul>
CLO4 : Construct written work which is logically and professionally presented	<ul style="list-style-type: none"><li>• PL03 : Business Communication</li></ul>

Course Learning Outcomes	Assessment Item
CLO1 : Explain various notions/concepts/principles in time series analysis and forecasting.	<ul style="list-style-type: none"> <li>• Problem Sets</li> <li>• Course Project</li> <li>• Final Exam</li> </ul>
CLO2 : Choose and use standard techniques of time series analysis to analyse real data, and build appropriate forecasting models.	<ul style="list-style-type: none"> <li>• Problem Sets</li> <li>• Course Project</li> <li>• Final Exam</li> </ul>
CLO3 : Review and interpret modelling and forecasting results critically.	<ul style="list-style-type: none"> <li>• Problem Sets</li> <li>• Course Project</li> </ul>
CLO4 : Construct written work which is logically and professionally presented	<ul style="list-style-type: none"> <li>• Final Exam</li> <li>• Problem Sets</li> <li>• Course Project</li> </ul>

## Learning and Teaching Technologies

Moodle - Learning Management System

## Learning and Teaching in this course

Learning Activities and Teaching Strategies

### Lectures

Pre-prepared video recordings for the lectures will be placed on the Moodle site. Students should view these videos and related materials. It is expected that it will take students at least 90 minutes to view and review these recordings. The scheduled lecture times are Mondays 14:00-15:30 and Wednesdays 14:00-15:30. The scheduled lecture time on Mondays (14:00-15:30) can be used for viewing and reviewing these recordings. There will be an in-person session with the Lecturer on Wednesdays 14:00-15:30, during which time he will go through the lecture material, providing further details and extra examples, and answering questions. In total, it is expected that students will spend three hours per week on the lecture materials (1.5 hours viewing and reviewing the recorded videos, plus 1.5 hours online with the lecturer on Wednesdays from 14:00 to 15:30).

The purpose of lectures is to provide a logical structure for the topics that make up the course; to emphasise the important principles/concepts/methods of each topic; and to provide relevant examples to which the principles/concepts/methods are applied.

### Tutorials

There are one and a half hour tutorials each week, starting from Week 2. Exercises will be assigned for each tutorial. Students should attempt these before attending tutorials. Along with the many examples provided in the lectures, they are the best guide to the types of questions that will be used in assessment tasks. Model answers to tutorial questions will be posted each week, after all the tutorials have been completed, providing you with feedback on how the questions should have been answered.

The tutorials are an integral part of the subject. Tutorial presentations, discussions, and solutions to problems are designed to help students deepen their understanding and practice learnt material. The tutorials will also help you learn and use the statistical package R that is used in the course.

**In summary**, there will be **4.5 hours of structured activities** for this course each week:

1. Viewing and reviewing lecture recordings: 1.5 hours
2. Attending an online lecture with the lecturer: 1.5 hours (Wednesdays 14:00-15:30)
3. Tutorials: 1.5 hours

**Statistics Computer Package R** is the computer package used in the course. The lectures, tutorials and online materials will show you how to download and use R. Some of you may have already had some or extensive experience with R. If not, you will learn its use through this course.

### Out-of-Class Study

While students may have preferred individual learning strategies, it is important to note that most learning will be achieved outside of class time. Lectures can only provide a structure to assist your study, and tutorial time is limited.

An “ideal” weekly strategy (on which the provision of the course materials is based) might include:

1. View the relevant pre-prepared video recordings and read the relevant chapter(s) of the text and lecture slides before attending the in-person lecture.
2. Attend the in-person lecture. Here the context of the topic in the course and the important elements of the topic are explained in more detail.
3. Attempt tutorial tasks and questions before attending the tutorial class. This helps you identify issues that can be discussed and resolved in the tutorial class.

# Assessments

## Assessment Structure

Assessment Item	Weight	Relevant Dates	Program learning outcomes
Problem Sets Assessment Format: Individual	20%	Due Date: 15:59 on Friday of Week 3 and Week 5	• PL01 : Business Knowledge • PL02 : Problem Solving • PL03 : Business Communication
Course Project Assessment Format: Individual	25%	Due Date: 15:59 on Friday of Week 9.	• PL01 : Business Knowledge • PL02 : Problem Solving • PL03 : Business Communication • PL05 : Responsible Business Practice
Final Exam Assessment Format: Individual	55%	Due Date: UNSW Exam Period	• PL01 : Business Knowledge • PL02 : Problem Solving • PL03 : Business Communication

## Assessment Details

### Problem Sets

#### Assessment Overview

Two problem sets will count for 10% each towards the final mark. You may consult with classmates, but your write-up must be your own. Submission will be through the course Moodle site. Both your write-up and the code used must be submitted. More details, including the format and marking criteria, will be posted on the Moodle site.

Assesses: PL01, PL02, PL03, PL04, PL05.

#### Course Learning Outcomes

- CL01 : Explain various notions/concepts/principles in time series analysis and forecasting.
- CL02 : Choose and use standard techniques of time series analysis to analyse real data, and build appropriate forecasting models.
- CL03 : Review and interpret modelling and forecasting results critically.
- CL04 : Construct written work which is logically and professionally presented

#### Assignment submission Turnitin type

This assignment is submitted through Turnitin and students do not see Turnitin similarity reports.

# Course Project

## Assessment Overview

The Course Project will be a forecasting exercise with real data, to be completed individually. You may consult with classmates, but your write-up must be your own. Submission will be through the course Moodle site. Both your write-up and the code used must be submitted.

Assesses: PLO1, PLO2, PLO3, PLO5, PLO7.

## Course Learning Outcomes

- CL01 : Explain various notions/concepts/principles in time series analysis and forecasting.
- CL02 : Choose and use standard techniques of time series analysis to analyse real data, and build appropriate forecasting models.
- CL03 : Review and interpret modelling and forecasting results critically.
- CL04 : Construct written work which is logically and professionally presented

## Detailed Assessment Description

The report should be no longer than 20 pages including bibliography and any appendices. Do not include a separate title page. At least 11 point font should be used, with adequate margins for comments. Any extra pages will not be marked. More details, including the format and marking criteria, will be posted on the Moodle site.

## Assessment Length

No longer than 20 pages including bibliography and any appendices

## Assignment submission Turnitin type

This assignment is submitted through Turnitin and students do not see Turnitin similarity reports.

# Final Exam

## Assessment Overview

The final exam will cover the entire course. All material covered in the course is examinable. Questions will include exercises in forecasting using actual data.

Assesses: PLO1, PLO2, PLO3.

## Course Learning Outcomes

- CL01 : Explain various notions/concepts/principles in time series analysis and forecasting.
- CL02 : Choose and use standard techniques of time series analysis to analyse real data, and build appropriate forecasting models.

- CLO4 : Construct written work which is logically and professionally presented

#### **Detailed Assessment Description**

Questions will include exercises in forecasting using actual data. It should take approx. 2 hours for a well-prepared student to complete the final exam.

#### **Assignment submission Turnitin type**

This assignment is submitted through Turnitin and students do not see Turnitin similarity reports.

## **General Assessment Information**

#### **Grading Basis**

Standard

#### **Requirements to pass course**

In order to pass this course students must:

- Achieve a composite mark of at least 50 out of 100
- Engage actively in course learning activities and attempt all assessment requirements
- Meet any additional requirements specified in the assessment details
- Meet the specified attendance requirements of the course (see Schedule section)

# Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 12 February - 18 February	Lecture	Introduction to Forecasting Time Series Graphics
	Reading	Hyndman and Athanasopoulos (2021), chapters 1 and 2
Week 2 : 19 February - 25 February	Lecture	Continuation of Time series graphics Time series decomposition
	Reading	Hyndman and Athanasopoulos (2021), chapters 2 and 3
	Tutorial	Introduction to R Exercises in R
Week 3 : 26 February - 3 March	Lecture	Features of time series Some tools for forecasting
	Reading	Hyndman and Athanasopoulos (2021), chapters 4 and 5
	Tutorial	More R practice Discuss tutorial exercises on: • Time series graphics • Time series decomposition
	Assessment	Problem Set 1 due by 4pm on Friday of this week.
Week 4 : 4 March - 10 March	Lecture	Judgemental forecasts Exponential Smoothing
	Reading	Hyndman and Athanasopoulos (2021), chapters 6 and 8
	Tutorial	Discuss tutorial exercises on: • Features of time series and tools for forecasting in R Feedback on the first Problem Set
Week 5 : 11 March - 17 March	Lecture	ARIMA Models
	Reading	Hyndman and Athanasopoulos (2021), Chapter 9
	Tutorial	Discuss tutorial exercises on: • Exponential smoothing in R
	Assessment	Problem Set 2 due by 4pm on Friday of this week.
Week 6 : 18 March - 24 March	Lecture	NO LECTURES
	Tutorial	NO TUTORIALS
Week 7 : 25 March - 31 March	Lecture	Continuation of ARIMA Models
	Reading	Hyndman and Athanasopoulos (2021), Chapter 9
	Tutorial	Discuss tutorial exercises on: • ARIMA Models Feedback on the second Problem Set
Week 8 : 1 April - 7 April	Lecture	Time Series Regression Models
	Tutorial	Discuss additional tutorial exercises on: • ARIMA Models
Week 9 : 8 April - 14 April	Lecture	Dynamic Regression Models
	Reading	Hyndman and Athanasopoulos (2021), Chapter 10
	Tutorial	Discuss tutorial exercises on: • Time Series Regression Models
	Assessment	Course Project submission due by 4pm on Friday of this week.
Week 10 : 15 April - 21 April	Lecture	NO LECTURES
	Tutorial	Discuss tutorial exercises on: • Dynamic Regression Models Wrap-up and preparation for the Final Exam

## Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.



# General Schedule Information

Pre-prepared video recordings for the lectures will be placed on the Moodle site. The scheduled lecture times are Mondays 14:00-15:30 and Wednesdays 14:00-15:30. The scheduled lecture time on Mondays (14:00-15:30) can be used for viewing and reviewing these recordings. There will be an in-person session with the Lecturer on Wednesdays 14:00-15:30, during which time he will go through the lecture material, providing further details and extra examples, and answering questions.

## Course Resources

### Prescribed Resources

The website for this course is on Moodle.

#### TEXTBOOK

Rob J Hyndman and George Athanasopoulos (2021), *Forecasting: Principles and Practice*, 3rd edition, OTexts: Melbourne, Australia. The book can be viewed online for free at <https://otexts.com/fpp3/>. You can also purchase the book in soft and hard copy. You may also find useful the slides based on the book at <https://robjhyndman.com/teaching/>. Pre-prepared lecture videos, lecture notes, slides and related resources will be available on the Moodle site. Some other useful books that might be of reference: Diebold, F.X. (2007), *Elements of Forecasting*, 4th Edition, Thomson South-Western (downloadable from the course website)

Gujarati, D.N. and Porter, D.C., *Basic Econometrics*, 5th Edition, McGraw Hill (downloadable).

Ord, J. K., Fildes, R., & Kourentzes, N. (2017). *Principles of business forecasting* (2nd ed.). Wessex Press Publishing Co. (available on Amazon)

Armstrong, J. S. (Ed.). (2001). *Principles of forecasting: A handbook for researchers and practitioners*. Kluwer Academic Publishers. (available on Amazon)

Newbold, P. and T. Bos (1994), *Introductory Business and Economic Forecasting*, 2nd Edition, International Thomson Publishing

Brockwell, P.J. and R.A. Davis (1996), *Introduction to Time Series and Forecasting*, Springer-Verlag  
Wilson, J.H. and B. Keating (2007), *Business Forecasting*, 5th Edition, McGraw-Hill/Irwin?

#### SOFTWARE

The software for the course is R and most of the exercises that you do will be in R. The assigned book uses R. R is a modern statistical language that has extensive capabilities and is free. This means that as part of the course you will master a modern computer package for data analytics that is increasingly used in business. Skills in using this software are increasingly valued.

## Course Evaluation and Development

Feedback is regularly sought from students and continual improvements are made based on this feedback. At the end of this course, you will be asked to complete the [myExperience survey](#), which provides a key source of student evaluative feedback. Your input into this quality enhancement process is extremely valuable in assisting us to meet the needs of our students and provide an effective and enriching learning experience. The results of all surveys are carefully considered and do lead to action towards enhancing educational quality.

The School of Economics strives to be responsive to student feedback. If you would like more information on how the design of this course and changes made to it over time have taken students' needs and preferences into account, please contact the Director of Academic Programs at the School of Economics.

### Consent for De-Identified Data to be Used for Secondary Research into Improving Student Experience

To enhance your student experience, researchers at UNSW conduct academic research that involves the use of de-identified student data, such as assessment outcomes, course grades, course engagement and participation, etc. Students of this course are being invited to provide their consent for their de-identified data to be shared with UNSW researchers for research purposes after the course is completed.

Providing consent for your de-identified data to be used in academic research is voluntary and not doing so will not have an impact on your course grades.

Researchers who want to access your de-identified data for future research projects will need to submit individual UNSW Ethics Applications for approval before they can access your data.

A full description of the research activities aims, risks associated with these activities and how your privacy and confidentiality will be protected at all times can be found [here](#).

If you **consent** to have your de-identified data used for academic research into improving student experience, you do not need to do anything. Your consent will be implied, and your data may be

used for research in a format that will not individually identify you after the course is completed.

If you **do not consent** for this to happen, please email the [opt-out form](#) to [seer@unsw.edu.au](mailto:seer@unsw.edu.au) to opt-out from having your de-identified data used in this manner. If you complete the opt-out form, the information about you that was collected during this course will not be used in academic research.

## Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Kevin Fox		Room 3119, Quadrangle Building	(02) 9385 3320	Wednesday 11:00-12:00 and by appointment	No	Yes

## Other Useful Information

### Academic Information

#### COURSE POLICIES AND SUPPORT

The Business School expects that you are familiar with the contents of this course outline and the UNSW and Business School learning expectations, rules, policies and support services as listed below:

- Program Learning Outcomes
- Academic Integrity and Plagiarism
- Student Responsibilities and Conduct
- Special Consideration
- Protocol for Viewing Final Exam Scripts
- Student Learning Support Services

Further information is provided on the [key policies and support](#) page.

Students may not circulate or post online any course materials such as handouts, exams, syllabi or similar resources from their courses without the written permission of their instructor.

#### STUDENT LEARNING OUTCOMES

The Course Learning Outcomes (CLOs) – under the Outcomes tab – are what you should be able to demonstrate by the end of this course, if you participate fully in learning activities and

successfully complete the assessment items.

CLOs also contribute to your achievement of the Program Learning Outcomes (PLOs), which are developed across the duration of a program. PLOs are, in turn, directly linked to [UNSW graduate capabilities](#). More information on Coursework PLOs is available on the [key policies and support](#) page. For PG Research PLOs, including MPDBS, please refer to the [UNSW HDR Learning Outcomes](#).

## Academic Honesty and Plagiarism

As a student at UNSW you are expected to display [academic integrity](#) in your work and interactions. Where a student breaches the [UNSW Student Code](#) with respect to academic integrity, the University may take disciplinary action under the Student Misconduct Procedure. To assure academic integrity, you may be required to demonstrate reasoning, research and the process of constructing work submitted for assessment.

To assist you in understanding what academic integrity means, and how to ensure that you do comply with the UNSW Student Code, it is strongly recommended that you complete the [Working with Academic Integrity](#) module before submitting your first assessment task. It is a free, online self-paced Moodle module that should take about one hour to complete.

## Submission of Assessment Tasks

### SPECIAL CONSIDERATION

You can apply for special consideration when illness or other circumstances beyond your control interfere with your performance in a specific assessment task or tasks, including online exams. Students studying remotely who have exams scheduled between 10pm and 7am local time, are also able to apply for special consideration to sit a supplementary exam at a time outside of these hours.

Special consideration is primarily intended to provide you with an extra opportunity to demonstrate the level of performance of which you are capable. To apply, and for further information, see Special Consideration on the UNSW [Current Students](#) page.

Special consideration applications will be assessed centrally by the Case Review Team, who will update the online application with the outcome and add any relevant comments. The change to the status of the application immediately sends an email to the student and to the assessor with

the outcome of the application.

Please note the following:

1. Applications can only be made through Online Services in myUNSW (see the UNSW [Current Students](#) page). Applications will not be accepted by teaching staff. The lecturer-in-charge/course coordinator will be automatically notified when your application is processed.
2. Applying for special consideration does not automatically mean that you will be granted a supplementary exam or other concession.
3. If you experience illness or misadventure in the lead up to an exam or assessment, you must submit an application for special consideration, either prior to the examination taking place, or prior to the assessment submission deadline, except where illness or misadventure prevent you from doing so.
4. If your circumstances stop you from applying before your exam or assessment due date, you must apply within 3 working days of the assessment or the period covered by your supporting documentation.
5. Under the UNSW Fit To Sit/Submit rule, if you sit the exam/submit an assignment, you are declaring yourself well enough to do so and are cannot subsequently apply for special consideration.
6. If you become unwell on the day of – or during – an exam, you must stop working on your exam, advise your course coordinator or tutor and provide a medical certificate dated within 24 hours of the exam, with your special consideration application. For online exams, you must contact your course coordinator or tutor immediately via email, Moodle or chat and advise them you are unwell and submit screenshots of your conversation along with your medical certificate and application.
7. Special consideration requests do not allow the awarding of additional marks to students.

Further information on Business School policy and procedure can be found under “Special Consideration” on the [key policies and support](#) page.

## LATE SUBMISSION PENALTIES

For assessments other than examinations, late submission will incur a penalty of 5% per day or part thereof (including weekends) from the due date and time. An assessment will not be accepted after 5 days (120 hours) of the original deadline unless special consideration has been approved. An assignment is considered late if the requested format, such as hard copy or electronic copy, has not been submitted on time or where the ‘wrong’ assignment has been submitted.

For assessments which account for 10% or less of the overall course grade, and where answers are immediately discussed or debriefed, the LIC may stipulate a different penalty. Details of such

late penalties will be available on the course Moodle page.

## FEEDBACK ON YOUR ASSESSMENT TASK PERFORMANCE

Feedback on student performance from formative and summative assessment tasks will be provided to students in a timely manner. Assessment tasks completed within the teaching period of a course, other than a final assessment, will be assessed and students provided with feedback, with or without a provisional result, within 10 working days of submission, under normal circumstances. Feedback on continuous assessment tasks (e.g. laboratory and studio-based, workplace-based, weekly quizzes) will be provided prior to the midpoint of the course.

## Faculty-specific Information

### PROTOCOL FOR VIEWING FINAL EXAM SCRIPTS

UNSW students have the right to view their final exam scripts, subject to a small number of very specific exemptions. The UNSW Business School has set a [protocol](#) under which students may view their final exam script. Individual schools within the Faculty may also set up additional local processes for viewing final exam scripts, so it is important that you check with your School.

If you are completing courses from the following schools, please note the additional school-specific information:

- Students in the **School of Accounting, Auditing & Taxation** who wish to view their final examination script should also refer to [this page](#).
- Students in the **School of Banking & Finance** should also refer to [this page](#).
- Students in the **School of Information Systems & Technology Management** should also refer to [this page](#).

### COURSE EVALUATION AND DEVELOPMENT

Feedback is regularly sought from students and continual improvements are made based on this feedback. At the end of this course, you will be asked to complete the [myExperience survey](#), which provides a key source of student evaluative feedback. Your input into this quality enhancement process is extremely valuable in assisting us to meet the needs of our students and provide an effective and enriching learning experience. The results of all surveys are carefully considered and do lead to action towards enhancing educational quality.

## QUALITY ASSURANCE

The Business School is actively monitoring student learning and quality of the student experience in all its programs. A random selection of completed assessment tasks may be used for quality assurance, such as to determine the extent to which program learning goals are being achieved. The information is required for accreditation purposes, and aggregated findings will be used to inform changes aimed at improving the quality of Business School programs. All material used for such processes will be treated as confidential.

## TEACHING TIMES AND LOCATIONS

Please note that teaching times and locations are subject to change. Students are strongly advised to refer to the [Class Timetable website](#) for the most up-to-date teaching times and locations.