



MONASH
University

MONASH
BUSINESS
SCHOOL

ETC3550/ETC5550

Applied forecasting

Contact details

Lecturer: Professor Rob Hyndman

✉ rob.hyndman@monash.edu

🏠 robjhyndman.com

🐦 @robjhyndman

👤 @robjhyndman

🏛️ Room E762, Menzies Building

Tutors

- Mitchell O'Hara-Wild
- Mahdi Abolghasemi
- Rakshitha Godahewa
- Sayani Gupta
- Elena Sanina
- Ryan Thompson

Brief bio

- Professor of Statistics, Monash University
- Head, Department of Econometrics & Business Statistics
- Editor-in-Chief, *International Journal of Forecasting*, 2005–2018

How my forecasting methodology is used:

- Pharmaceutical Benefits Scheme
- Electricity demand
- Australian tourism demand
- Ageing population
- > 3 million downloads per year

Unit objectives

- 1 To obtain an understanding of common statistical methods used in business and economic forecasting.
- 2 To develop the computer skills required to forecast business and economic time series data;
- 3 To gain insights into the problems of implementing and operating large scale forecasting systems for use in business.

Teaching and learning approach

Two 50 minute classes and a one 80 minute computer lab session each week for 12 weeks.



Available for download from CRAN:

<https://cran.csiro.au/>



Available for download from RStudio:

<https://www.rstudio.com/products/rstudio/>

How familiar are you with R?

<https://pollev.com/robjhyndman>

Key reference

Hyndman, R. J. & Athanasopoulos, G. (2021)
***Forecasting: principles and practice*, 3rd edition**

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Hyndman, R. J. & Athanasopoulos, G. (2021)
Forecasting: principles and practice, 3rd edition

[OTexts.org/fpp3/](https://otexts.org/fpp3/)

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- Free and online
- Data sets in associated R packages
- R code for examples

Main packages



tsibble



tsibbledata

tidyverse

www.studio.com



feasts



Fable

Main packages

```
# Data manipulation and plotting functions  
library(tidyverse)  
# Time series manipulation  
library(tsibble)  
# Tidy time series data  
library(tsibbledata)  
# Time series graphics and statistics  
library(feasts)  
# Forecasting functions  
library(fable)
```

Main packages

Data manipulation and plotting functions

```
library(tidyverse)
```

Time series manipulation

```
library(tsibble)
```

Tidy time series data

```
library(tsibbledata)
```

Time series graphics and statistics

```
library(feasts)
```

Forecasting functions

```
library(fable)
```

All of the above

```
library(fpp3)
```

Install required packages

```
install.packages(c(  
  "tidyverse",  
  "fpp3"  
))
```

Outline

Week	Topic	Chapter
1	Introduction to forecasting and R	1
2	Time series graphics	2
3	Time series decomposition	3
4	The forecaster's toolbox	5
5-6	Exponential smoothing	8
7-9	Forecasting with ARIMA models	9
10-11	Multiple regression and forecasting	7
11-12	Dynamic regression	10

Assessment

- 8 or 9 short assignments, worth a total of 20%.
- One project due at the end of the semester, worth 20%.
- Exam (2 hours): 60%.

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Task	Due Date	Value
Assignments	Sun 11:59pm each week	2 or 4% each
Project	Fri 28 May	20%
Final exam	Official exam period	60%

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- Need at least 45% for exam, and 50% for total.

- Includes all course materials
- Assignment submissions
- Forum for asking questions, etc.

Please don't send emails. Use the forum.

Exercises Week 1

- Make sure you are familiar with R, RStudio and the tidyverse packages.
- If you've done ETC1010 or ETC5010, then you have nothing to do.
- Otherwise:
 - ▶ Read the first four chapters of “ModernDive”: moderndive.netlify.com
 - ▶ Work through the “RYouWithMe” course: rladiessydney.org/courses/ryouwithme/



- The IIF provides a prize to the top student in this subject each year.
- US\$100 plus one year membership.