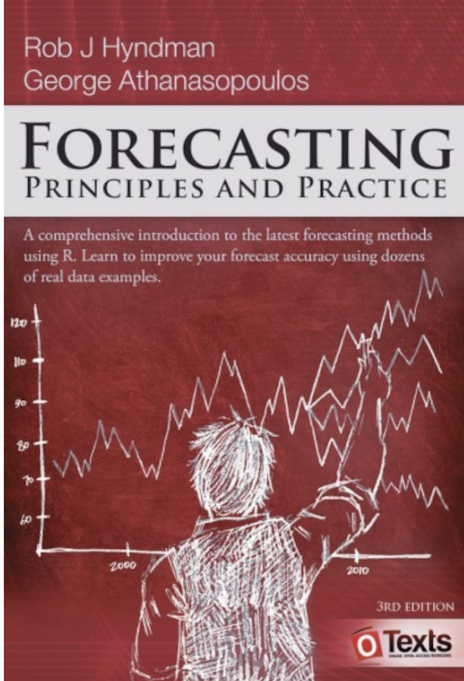
ETC3550/ETC5550
Applied forecasting



Contact details

Lecturer: Professor Rob Hyndman

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Tutors

- **Mitchell O'Hara-Wild**
- Yashpal Ramakrishnaiah
- Elena Sanina
- Ryan Thompson
- Fin Yang

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
- COVID-19 cases
- $>$ 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 lectures and one 80 minute tutorial each week for 12 weeks.

R

Available for download from CRAN:

`https://cran.r-project.org`

Available for download from RStudio:

`https://www.rstudio.com/products/rstudio/download/`

Key reference

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

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OTexts.org/fpp3/

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

Main packages

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```
# Install required packages (do once)
install.packages(c("tidyverse", "fpp3"))
```

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```
# At the start of each session
library(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 towards the end of the semester, worth 20%.
- Exam (2 hours): 60%.

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Project	Fri 20 May	20%
Final exam	Official exam period	60%

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ETC5550 students:

One assignment different, and extra exam question.

Moodle site

- 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.
- Do first five chapters of `learnr.numbat.space`.
- Assignment 1

International Institute of Forecasters

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