MONASH University

MONASH BUSINESS SCHOOL

ETC3550/ETC5550
Applied forecasting

Contact details

Lecturer: Professor Rob Hyndman

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Tutors

- **Mitchell O'Hara-Wild**
- Nan Qu
- Elena Sanina
- Xiaoqian Wang
- Zhixiang (Elvis) 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

- Recorded lectures embedded in the textbook at OTexts.com/fpp3
- No scheduled activities on Monday (other than week 1)
- One 50 minute lecture each Wednesday for 12 weeks.
- 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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- 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"))
```

Main packages

```r
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```

```r
# 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

Classes

Lectures

Week 1: Monday 11am in-person. Wednesday 3pm online

Weeks 2–11: Wednesday 3pm online

Week 12: Wednesday 3pm in-person

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- In-person unless you’re overseas.

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- All lectures will be recorded and posted on Moodle
- One tutorial will be recorded each week and posted on Moodle.

Assessment

- Four assignments and one larger project: 40%
- Exam (2 hours): 60%.

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Task	Due Date	Value
Assignment 1	Sun 12 March	2%
Assignment 2	Sun 26 March	6%
Assignment 3	Sun 16 April	6%
Assignment 4	Sun 30 April	6%
Project	Sun 21 May	20%
Final exam	Official exam period	60%

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- Need at least 45% for exam, and 50% for total.
- **ETC5550 students:** 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.