

# ETC3550/ETC5550

## Applied forecasting



# Contact details

## Lecturer: Professor Rob Hyndman

✉ [rob.hyndman@monash.edu](mailto:rob.hyndman@monash.edu)

🏠 [robjhyndman.com](http://robjhyndman.com)

🐦 [@robjhyndman](https://twitter.com/robjhyndman)

## 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.



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

## Key reference

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

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

## Key reference

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

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

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



# Main packages



# Main packages

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

# Main packages

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

```
# 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%.

# 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%.

Task	Due Date	Value
Assignments	Sun 11:55pm each week	2 or 4% each
Project	Fri 20 May	20%
Final exam	Official exam period	60%

# 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%.

Task	Due Date	Value
Assignments	Sun 11:55pm each week	2 or 4% each
Project	Fri 20 May	20%
Final exam	Official exam period	60%

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

# 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%.

Task	Due Date	Value
Assignments	Sun 11:55pm each week	2 or 4% each
Project	Fri 20 May	20%
Final exam	Official exam period	60%

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

## 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.