



**MONASH**  
University

MONASH  
BUSINESS  
SCHOOL

# **ETC3550/ETC5550**

## **Applied forecasting**

# Contact details

## Lecturer: Professor Rob Hyndman

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## 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/>

# Key reference

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

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

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*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



**tsibble**



**tsibbledata**

**tidyverse**

[www.studio.com](http://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)
```

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library(tidyverse)
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*# Time series manipulation*

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library(tsibble)
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*# Tidy time series data*

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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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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](https://moderndive.netlify.com)
  - ▶ Work through the “RYouWithMe” course: [rladiessydney.org/courses/ryouwithme/](https://rladiessydney.org/courses/ryouwithme/)



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