MONASH University

MONASH BUSINESS SCHOOL

ETC3550
Applied forecasting for business and economics

Contact details

Lecturer

Professor Rob Hyndman

- Room E762, Menzies Building
- Email: Rob.Hyndman@monash.edu

Tutors

- Mitchell O'Hara-Wild
- Hansika Hewamalage
- Ryan Thompson
- Sayani Gupta

Find me at ...

@robjhyndman

@robjhyndman

robjhyndman.com

rob.hyndman@monash.edu

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
- Cancer incidence and mortality
- Electricity demand
- Ageing population
- Fertilizer sales

robjhyndman.com

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.

R

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. (2020)
***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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```
# 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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```

```
# 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

- Nine short assignments, worth 2% or 4% each.
- One project due at the end of the semester, worth 20%.
- Exam (2 hours): 60%.

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ETC5550 students: in-class exam on 5 June

Moodle site

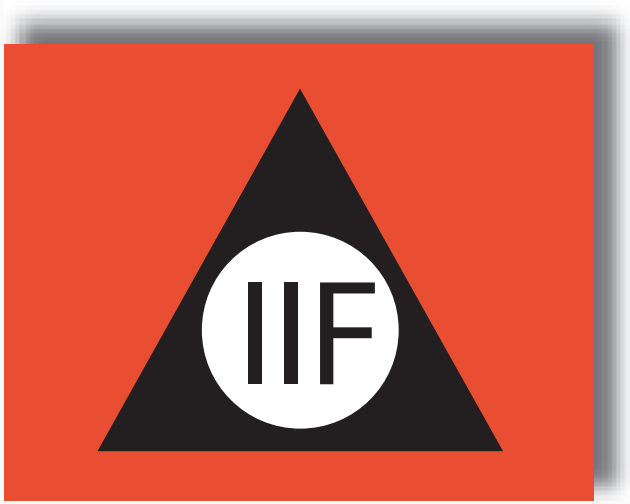
- Includes all lecture notes, handouts, assignments
- Assignment submissions
- Forum for asking questions, etc.

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, 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/`

International Institute of Forecasters



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