RESEARCH SCHOOL OF FINANCE, ACTUARIAL STUDIES AND STATISTICS
College of Business & Economics, The Australian National University

GENERALISED LINEAR MODELS
(STAT3015/STAT4030/STAT7030)

Recommended References

There are extensive course notes available for this course, so there is no prescribed textbook. **You do not need to purchase any textbooks**.

You may, however, find the following general texts useful. The ones I have chosen are all in the ANU library collection and you may also be able to find e-copies of many of these texts. Note the American spelling of the topic, which is "generalized"; rather than "generalised".

Good revision texts (also cover first topic on ANOVA/ANCOVA)

Clarke, BR (2008) *Linear Models: the Theory and Application of Analysis of Variance,* Wiley.
(Hancock library, call number QA279.C55 2008) – Contains all the maths behind the R routines.

Faraway, JJ (2015) *Linear Models with R* 2nd Edn, CRC Press.
(Hancock library, call number QA279.F37 2015) – Covers most of the STAT2008/6038 Regression Modelling course and more.

Maindonald, J and Braun WJ (2010) *Data Analysis and Graphics using R: an Example-based Approach* 3rd Edn, CRC Press.
(Hancock library, call number QA276.4.M245 2010) – Similar coverage to Verzani's text, below.

Verzani, J (2014) *Using R for Introductory Statistics* 2nd Edn, CRC Press.
(Hancock library, call number QA276.4.V47 2014) – Good way to revise both basic statistics and R.

Introductory GLM texts

Dobson, AJ & Barnett, AG (2008) *An Introduction to Generalized Linear Models* 3rd Edn, CRC Press.
(Hancock library, call number QA276.D589 2008) – A good general introduction.

Faraway, JJ (2016) *Extending the Linear Model with R: Generalized Linear, Mixed Effects and Nonparametric Regression Models* 2nd Edn, CRC Press.
(First edition in Hancock library, call number QA279.F368 2006) – Covers most of the contents of this course and is also available as an e-book in the ANU library.

Fox, J (2016) *Applied Regression Analysis, and Generalized Linear Models* 3rd Edn, SAGE.
(Chifley library, call number HA31.3.F69 2016) – The only book on this list that I don't have a copy of, but earlier editions of Fox's notes are readily available via the CRAN site and elsewhere on the Internet.

McCullagh, P & Nelder, JA (1989) *Generalized Linear Models* 2nd Edn, Chapman & Hall/CRC.
(Hancock library, call number QA276.M23 1989) – Second edition of the classic text that popularized the GLM framework – the term "Generalized Linear Models" is due to Nelder and Wedderburn in a 1974 JRSS paper of the same name (JRRSA **135**, 370-84), in which they showed how linearity could be exploited to unify apparently diverse statistical modelling techniques.

McCulloch, CE, Searle, SR & Neuhaus, JM (2008) *Generalized, Linear, and Mixed Models,* Wiley.
(Hancock library, call number QA279.M3847 2008) – Also available as an e-book in the ANU library.

Applications of GLMs

Agresti, A (2013) *Categorical Data Analysis* 3rd Edn, Wiley.
(Hancock library, call number QA278.A353 1990) – Call number is for the first edition – the third edition is only available in the ANU library as an e-book.

Bilder, CR & Loughlin, TM (2015) *Analysis of Categorical Data with R*, CRC Press.
Available in the ANU library as an e-book.

Gelman, A & Hill, J (2007) *Data Analysis using Regression and Multilevel/Hierarchical Models*, Cambridge University Press.
Available in the ANU library as an e-book.

de Jong, P & Heller, GZ (2008) *Generalized Linear Models for Insurance Data*, Cambridge University Press.
The ANU library now holds a copy of this Australian text (designed for actuarial studies courses at Macquarie University), see https://virtual.anu.edu.au/login/?url=http://dx.doi.org/10.1017/CBO9780511755408 and the data used in examples are available from:
http://www.businessandeconomics.mq.edu.au/our_departments/applied_finance_and_actuarial_studies/research/books/GLMsforInsuranceData

Myers, RH, Montgomery, DC & Vining, GG (2002) *Generalized Linear Models: with Applications in Engineering and the Sciences*, Wiley.
(Hancock library, call number QA276.M94 2002)

Ramsey, FL & Schafer, DW (2013) *The Statistical Sleuth: a Course in Methods of Data Analysis* 3rd Edn, Brooks/Cole.
(Hancock library, call number QA276.R33 2013) – The text for STAT3008/7001 Applied Statistics.

Wood, SN (2017) *Generalized Additive Models: an Introduction with R* 2nd Edn, CRC Press.
(First edition in Hancock library, call number QA274.73.W66 2006, second edition available as an e-book in the ANU library).

Other reference material

The GLMs framework has been around since 1974, which makes it relatively new when compared with many of the techniques covered in an introductory course in statistics, but more than 40 years is long enough to stand the "test of time" and for a lot of research work to have been done in this area, much of which has been published on the Internet. Searching on any of the key topic words will produce a wealth of material of varying quality. For example, Gordon Smyth's pages on StatSci.org (http://www.statsci.org/glm/index.html) still contain useful information and some good links, even though they are now a little dated as Gordon last updated them in 2003.