BIO
STATISTICS
COLLABORATION
OF AUSTRALIA

Study Guide

Data Management and Statistical Computing (DMC)

Semester 2, 2018

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THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA

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Welcome Letter

Welcome to Data Management and Statistical Computing (DMC). In this course we will develop statistical computing skills essential for managing and analysing data in health and medicine. This course provides an introduction to SAS and Stata, with the aim of giving you a foundation to build upon in your further studies and in your biostatistical career.

This course is delivered through the eLearning site at the University of Sydney. All course content other than readings will be uploaded to eLearning, including assignments and supplementary material, and discussions of material will take place on the Discussion Board. There is currently an Introductions thread on Discussion Board; please use this thread to introduce yourself to the rest of the class.

This course requires access to two statistical software packages: SAS and Stata. You should organise access to these as soon as possible. Instructions for purchasing a

license, or accessing the web-based SAS on Demand, are given in the BCA Textbook and Software Guide.

If you have any questions or issues, please contact me by email at the address above.

I hope you enjoy the course!

Michael Waller
July 2018

Course Objectives

This course aims to provide students with skills to undertake moderate to high level data management, manipulation, and analysis. On completion of this unit, students should:

1. Be able to undertake data manipulation and management using two major statistical software packages (Stata and SAS);

2. Be able to appropriately display and summarise data using statistical software;

3. Understand how to check and clean data;

4. Be able to link data files through unique and non-unique identifiers;

5. Have fundamental programming skills for efficient use of statistical software;

6. Understand key principles of confidentiality and privacy in data storage, management and analysis.

Course Content

This course consists of three modules:

- Module 1: The basics. Importing and exporting data; recoding and formatting data; labelling variables and values; use of date data, displaying and summarising data.
- Module 2: Graphs, Data management and Statistical Quality Assurance Methods. Includes advanced graphics for production of publication-quality graphs.
- Module 3: Data Management. Using functions to generate new variables; appending, merging and transposing data; programming skills including loops, arguments and programs/macros.

Each module requires approximately 4 weeks of study; the final week of semester will be left for revision, or to cover other issues which arise during the course.

Course material consists of (a) the notes which are provided for each module, (b) the text books and other required reading, and (c) further notes, code and data files which will be provided on eLearning.

Text Books

You should have access to the following textbooks:

Jull S, Frydenberg M. An Introduction to Stata for Health Researchers, 4th ed. Stata Press, 2014.
Delwiche LD, Slaughter SJ. The Little SAS Book: A Primer 5th ed. SAS Institute Inc., Cary, NC, USA, 2012.

Relevant material from the following text book will also be made available on blackboard:
Ottesen RA, Delwiche LD, Slaughter SJ. Exercises and Projects for The Little SAS Book, 5th ed. SAS Institute Inc., Cary, NC, USA, 2015

I recommend you check your University Libraries to see if ebook (Full Text Online) versions are available. If you have any issues accessing these text books please contact me.

Readings

In addition to the text books, various other materials are set as required or supplementary readings in each module. These cannot be uploaded to eLearning. You can access the articles through your university's library; further assistance in accessing readings will be given during the course.

Software

You should have access to the following software packages:
  ☐Stata version 12 or later (the latest version is v15)
  ☐SAS version 9.2 or later (the latest version is 9.4)
If you have not yet organised access to these packages, you should do so as soon as possible. This is a practical course which requires regular use of the relevant software; delays in gaining access to these packages may impact your ability to complete the course.

Information on how to purchase software, or arrange access via a university site license or SAS on Demand, can be found in the [BCA Textbook and Software Guide](#).

Method of Delivery

DMC is taught as an online course. For information on eLearning, see the [BCA Introduction to eLearning](#).

Module notes, data files and other documents will be made available on eLearning. Assignments and course announcements will likewise be uploaded to eLearning.

Communication should generally be via the Discussion Board on eLearning (unless of a personal/confidential nature). You are encouraged to post questions, ideas, suggestions and discussions on eLearning. The Course Coordinator will monitor and respond to communication; however, you are encouraged to answer other students' questions or assist in solving problems (with the exception of assignment question queries, which I will clarify).

Assessment

The assessment for this unit consists of three assignments:

- Assignment 1 will cover Module 1, and is worth 30% of the overall course mark. It is due before midnight (EST) on Monday 27th August 2018.
- Assignment 2 will cover Module 2, and is worth 35% of the overall course mark. It is due before midnight (EST) on Monday 1st October 2018.
- Assignment 3 will cover Module 3, as well as Modules 1 and 2, and is worth 35% of the overall course mark. It is due before midnight (EST) on Sunday 28th October 2018.

All assignments will be posted on eLearning 2.5 weeks before the due date. Individual feedback will be provided to each student; model solutions will also be provided once marked assignments have been returned. Summary statistics on results for the entire class will also be provided.

Assignments should be submitted via the assignment submission tool on eLearning; if you experience difficulties with this submission method, assignments can be submitted via email.

Extensions

For various reasons, you may sometimes experience difficulties in getting your assignments submitted on the due date. Requests for an extension for an assignment must be made **in advance of the due date for that assignment**. The normal grounds for an extension being granted are bereavement, personal illness or illness in a family member requiring you to exercise a significant carer role.

These requests must be made directly to Michael Waller by email, and should include appropriate documentation (e.g. medical certificate). The time and date of the request will be noted, and a reply sent by email with the decision as to whether an extension has been granted and, if so, stating the length of the extension.

Length of extension: Extensions granted by Unit Coordinators will normally be no longer than three days.

Penalties for Late Submission

Assignments should be submitted no later than midnight EST on the due date. Submissions after this time will be penalised at a rate of 5% of the earned mark per day, up to a maximum of 50%.

NOTE: It is not the intention of this late penalty policy to cause a student to fail the unit when otherwise they would have passed. If deductions for late assignments result in the final unit mark for a student being less than 50, when otherwise it would have been 50 or greater, the student's final mark will be exactly 50.

Submissions after the solutions have been posted on eLearning will not be awarded any marks.

For example, if your mark for an assignment is 40/50 but you submit it two days late, 10% of your mark will be deducted so your final mark will be 36/50.

Assignment Cover Sheet

Where assignment work is submitted online using the Assignment tool in eLearning, you will be able to indicate your compliance with the plagiarism guidelines and policy by electronic means. In this case, you **do not** need to complete the DMC 2018 Assignment Cover Sheet.

If you submit work by another method, then you **do** need to complete the DMC 2018 Assignment Cover Sheet, in which you will be asked to certify that the submission is your own work and that you have read the policy of the university at which you are enrolled (see Appendix 2). The cover sheet can also be downloaded from eLearning. If you are posting your submission, please include the signed cover sheet in the envelope.
If you are submitting via email, please scan the signed cover sheet and submit this with your assignment, or fax the signed cover sheet to the number specified on the sheet.

Please refer to the BCA Assessment Guide for further information.

Course Timetable

Semester 2, 2018 will commence on Monday 26th February.

Week	Week Commencing	Module	Assessment
1	Monday 30th July	1	
2	Monday 6th August	1	Assignment 1 Available Friday 10th August
3	Monday 13th August	1	
4	Monday 20th August	1	
5	Monday 27th August	2	**Assignment 1 Due Monday 27th August**

6	Monday 3rd September	2	
7	Monday 10th September	2	Assignment 2 Available Friday 14th September
8	Monday 17th September	2	
	Monday 24th September to Sunday 30th September - Mid Semester Break		
9	Monday 1st October	3	**Assignment 2 Due Monday 1st October**
10	Monday 8th October	3	Assignment 3 Available Friday 12th October
11	Monday 15th October	3	
12	Monday 22st October	3	
			Assignment 3 Due Sunday 28th October