

## Subject Information Guide

### SURVEY DESIGN AND ANALYSIS STAT904

**Semester 2, 2015**

#### Administration and contact details

<b>Host Department</b>	School of Mathematics and Applied Statistics
<b>Host Institution</b>	University of Wollongong
<b>Name of lecturers</b>	Name: Robert Clark
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	Name: Ray Chambers
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	Name: David Steel
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	Homepage: <a href="http://eis.uow.edu.au/smas/index.html">http://eis.uow.edu.au/smas/index.html</a>
<b>Name of Honours coordinator</b>	Rodney Nillsen
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#### Subject details

<b>Handbook entry URL</b>	<a href="https://solss.uow.edu.au/sid/CAL.USER_SUBJECTINFO_SCREEN?p_faccode=24&amp;p_depabb=M AAS&amp;p_subcode=STAT903&amp;p_cal_subject_id=155150&amp;p_year=2015&amp;p_cal_type=P&amp;p_cal_types=UP&amp;p_breadcrumb_type=1&amp;p_menu_type=1">https://solss.uow.edu.au/sid/CAL.USER_SUBJECTINFO_SCREEN?p_faccode=24&amp;p_depabb=M AAS&amp;p_subcode=STAT903&amp;p_cal_subject_id=155150&amp;p_year=2015&amp;p_cal_type=P&amp;p_cal_types=UP&amp;p_breadcrumb_type=1&amp;p_menu_type=1</a>
<b>Subject homepage URL</b>	NA
<b>Honours student hand-out URL</b>	<a href="http://www.uow.edu.au/informatics/maths/students/current/honours/index.html">www.uow.edu.au/informatics/maths/students/current/honours/index.html</a>
<b>Start date:</b>	29/07/2015
<b>End date:</b>	28/10/2015
<b>Contact hours per week:</b>	2
<b>Lecture day and time:</b>	WED 13:30-15:30
<b>Description of electronic access arrangements for students</b>	UOW eLearning space (Moodle) Email: rclark@uow.edu.au UOW eLearning space (Moodle) rclark@uow.edu.au

## Subject content

### 1. Subject content description

STAT903 will give a foundation in the model-based prediction approach to sample surveys. The subject will closely follow the textbook *Introduction to Model-Based Survey Sampling with Applications* (2012) (Chambers, R.L. and Clark, R.G.) (Oxford University Press). This text (Chambers and Clark 2012) is available for download via University of Wollongong library site. It is essential to have access to this text to complete the subject.

### 2. Week-by-week topic overview

Week 1: Overview of Approaches to Estimation and Analysis for Sample Surveys (*Lecturer: Prof David Steel*)

Weeks 2, 3, 5-9: Basics of Model-Based Inference for Surveys (there will not be a lecture in week 4, but there will be reading and an assignment and Dr Clark will be available for consultation) (*Lecturer: A/Prof Robert Clark*)

Weeks 10-13: Robust Model-Based Inference for Surveys and Applications (Prof Ray Chambers)

### 3. Assumed prerequisite knowledge and capabilities

Major in undergraduate statistics, including common statistical methods such as linear regression with matrix notation, introductory probability and distribution theory, introductory sample surveys.

### 4. Learning outcomes and objectives

After successful completion of this subject, students should be able to perform the following tasks: understand the basic approach of the prediction framework for surveys; be able to derive empirical best and best linear unbiased estimators given a population model; be able to derive or evaluate variance estimators given a population model; understand issues and methods in prediction for models suitable for stratified populations, populations with one or more continuous auxiliary variables, and clustered populations; be able to evaluate robustness of predictors to various types of model failure, and be able to apply alternative methods; be able to develop an appropriate model for a given example using sample data, and hence develop and calculate appropriate predictors of population quantities.

## 5. Learning resources

- Text/printed notes  
Some slides will be distributed to students as required and made available on the UOW eLearning Space.
- Software (local access)  
Access to a standard statistical software package such as SPSS, Stata, JMP, SAS, or R will be required to undertake some statistical analysis for assignments.

## 6. Assessment

Your final mark in STAT903 will be determined as follows:

Assessment task	Weighting
Assignments (6)	30%
Midsession	20%
Final Exam	50%
<i>Total:</i>	<b>100%</b>

**Scaling** of marks is **not** a standard procedure in this subject.

Note that you are not required to “pass” each individual component to receive a Pass grade in this subject. However, you would seriously jeopardize your chances of passing this subject if you do not aim to be successful in every component of the assessment.

Supplementary assessments are offered by the School to *eligible* students on 48 or 49 under the Supplementary Assessments Guidelines (see <http://www.uow.edu.au/about/policy/alphalisting/UOW123101.html>).

## Institution Honours program details

Weight of subject in total honours assessment at host department	1/8
Thesis/subject split at host department	<b>BMath(Hons): Thesis worth 25%</b> <b>BMathAdv(Hons): Thesis worth 37.5%</b>
Honours grade ranges at host department:	
<b>H1</b>	85-100
<b>H2a</b>	75-84
<b>H2b</b>	65-74
<b>H3</b>	50-64