Unit of Study Code: PSYC3010

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Format of Unit: 2 x 1 hour lectures/week x 13 weeks
1 x 2 hour tutorial/week x 11 weeks
*Tutorials commence in Week 2*

Credit Point Value: 6 Credit Points

Time Commitment: 4 hours face to face per week; minimum 8 hours private study per week.

Lecture Attendance: Required. 80% recommended to pass unit. Audio recordings made of most lecture content and most slides posted online.

Tutorial Attendance: Required. 80% recommended to pass unit. Attendance recorded.

Prerequisites: PSYC2012 (or PSYC2112) plus one other Intermediate Psychology Unit from PSYC 2011 (or PSYC2111), PSYC2013 (or PSYC2113), PSYC 2014 (or PSYC2114)
PSYC3010 Assessment Summary:

<table>
<thead>
<tr>
<th>Assessment Name</th>
<th>Assessment Type (When applying for Special Consideration)</th>
<th>% Assessment Weighting</th>
<th>Duration of Assessment</th>
<th>Available / Due Date</th>
<th>Feedback/Return of Marks Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-class Test 1 (open book; short answer)</td>
<td>In-class assessment: Tutorial quiz or Small test</td>
<td>5%</td>
<td>35 minutes working (+ 3 mins reading time)</td>
<td>During your timetabled tutorial in Week 4 (21st-24th August)</td>
<td>Marks will be returned by the end of Week 6</td>
</tr>
<tr>
<td>In-class Practical 1 (closed book; computerised short answer)</td>
<td>In-class assessment: Small continuous assessment</td>
<td>15%</td>
<td>45 minutes working (+ 5 mins reading time)</td>
<td>During your timetabled tutorial in Week 7 (11th - 14th September)</td>
<td>Marks will be returned by the end of Week 10</td>
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<tr>
<td>In-class Practical 2 (closed book; computerised multiple choice &amp; short answer)</td>
<td>In-class assessment: Small continuous assessment</td>
<td>10%</td>
<td>40 minutes working (+ 5 mins reading time)</td>
<td>During your timetabled tutorial in Week 11 (16th - 19th October)</td>
<td>Marks will be returned by the end of Week 13</td>
</tr>
<tr>
<td>In-class Test 2 (closed book; computerized multiple choice)</td>
<td>In-class assessment: Tutorial quiz or Small test</td>
<td>10%</td>
<td>20 minutes (no reading time)</td>
<td>During your timetabled tutorial in Week 13 (30th October – 2nd November)</td>
<td>Marks will be returned during STUVAC</td>
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<tr>
<td>Final Exam (closed book; multiple choice &amp; short answer)</td>
<td>Final Exam</td>
<td>60%</td>
<td>120 minutes (+ 10 mins reading time)</td>
<td>During University exam period (13th Nov. – 25th Nov.)</td>
<td>University Final Results Release Date</td>
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TOTAL 100%

- In PSYC3010 no minimum mark for any assessment automatically results in a fail. If your marks for all assessment tasks (including the exam) add up to 50 or more, you will pass the unit.

Assessment Standards and Criteria:

ANOVA SECTION

In-class Test 1, Week 4, 21– 25 August
- Based on lecture and tutorial material from weeks 1 – 3, inclusive.
- Short-answer questions.
- Approved calculators are permitted. Students will need to be able to interpret SPSS output.

In-class Practical 1, Week 7, 11 – 15 September
- Based on lecture and tutorial material from weeks 1 – 6, inclusive.
- Short-answer questions.
- Approved calculators are permitted. Students will need to be able to use SPSS and interpret SPSS output.

MULTIPLE REGRESSION SECTION

In-class Practical 2 Week 11, 16 – 20 October
- Based on lecture and tutorial material from weeks 7 – 10, inclusive.
- Combination of multiple choice and short-answer questions.

University of Sydney - Syllabus of PSYC3010, Semester 2, 2017
• Approved calculators are permitted. Students will need to be able to use SPSS and interpret SPSS output.

In-class Test 2, Week 13, 30 October– 6 November
• Based on lecture and tutorial material from weeks 7 – 12, inclusive.
• Multiple choice questions.
• Approved calculators are permitted. Students will need to be able to interpret SPSS output.

Disruptions to Your Study:

If your assessments are disrupted by illness or misadventure or unavoidable community commitments, apply for Special Consideration or Special Arrangements online here:

If you have (or develop) a continuing issue, register with Disability Services here: www.sydney.edu.au/disability

In this unit of study Simple Extensions are not granted. Apply formally for special consideration using the link above if you require any extension.

Special Consideration

Note that students who apply for and are granted either special arrangements or special consideration for examinations in units offered by the Faculty of Science will be expected to sit any replacement assessments in the two weeks immediately following the end of the formal examination period. Later dates for replacement assessments may be considered where the application is supported by appropriate documentation and provided that adequate resources are available to accommodate any later date.

Please note: If you are ill and miss a tutorial, contact the tutor of another tutorial and request permission to attend that person’s tutorial time for that week; do NOT use the online special consideration form for missed tutorials unless the missed tutorial contains an In-class Test or In-class Practical. If in doubt, please contact Steson (steson.lo@sydney.edu.au).

Late Penalties:

All in-semester assessments for PSYC3010 will be held during tutorial time. In-class assessments require access to computer terminals and the number of computers in the tutorial room is limited, therefore you must attend the tutorial you are allocated to. Failure to complete an in-class assessment without prior special consideration will result in 0 marks for that assessment.

For written alternative assessments (e.g., as might be set for a supplementary assessment), you will receive a penalty of 2% of the maximum value of the assessment (e.g. 2 marks out of 100) for each day (or part thereof) it is late, up to the closing date of the assessment, after which no more submissions will be accepted.

Assuring the Academic Integrity of PSYC3010:

All written assessments will be submitted to Turnitin similarity detecting software in this unit. If we suspect your assessment has been written by someone else, we reserve the right to ask you to explain and defend the work you have submitted as your own, in person.

If you are a commencing student at the University of Sydney you are required to complete the Academic Honesty Education Module. Please do this before you submit any written work to any unit of study.

To assure the integrity of our final exam, all replacement exams may be in a different format with entirely different questions.
All Special Consideration requests are now processed centrally and Professional Practitioners Certificates will be cross-checked with medical service providers. Keep a hard copy of all documentation you submit until you graduate.

Changes made to this unit in response to student feedback:
Both In-class Test 1 and In-class Practical 1 has been changed in response to student feedback.

Unit of Study General Description:

PSYC3010 covers advanced statistics for psychology. The course is divided into two sections. The first section covers the design and analysis of experiments in psychology for which some form of analysis of variance is appropriate. The second section covers multiple regression and path analyses. Tutorials for both sections will involve the use of statistical packages on a computer as well as hand calculations. Students should bring a calculator to all tutorials.

Student Learning Outcomes:
This course is structured around the graduate attributes associated with the scientist-practitioner model, the basis for the training of psychologists in Australia and internationally. Graduate Attributes are the generic skills, abilities and qualities that students should acquire during their university experience and the School of Psychology is committed to providing an environment to promote these skills. In addition, this unit of study will provide students with generalised and transferable skills that will also be useful in careers outside psychology. The following graduate attributes and student learning outcomes will be developed through lectures, tutorials, and assessments.

1: Advanced Understanding of Techniques of Statistical Inference in Psychology
As an advanced course, students are expected to develop a thorough understanding of techniques of statistical inference used in psychological research. This includes the ability to conduct and interpret analyses.

Student learning outcomes:
   a) Critically analyse empirical studies.
   b) Calculate and interpret a one-way analysis of variance, including tests of contrasts.
   c) Calculate, analyse and interpret data from factorial designs including ANOVA and contrasts.
   d) Demonstrate an understanding of the problem of multiple comparisons and control of the Type I error rate.
   e) Demonstrate understanding of issues involved in the treatment of data involving repeated time points.
   f) Perform computer-based analyses and interpret ANOVA and contrasts.
   g) Calculate and interpret multiple regression (MR) and related methods.
   h) Evaluate different types of MR and choose the analysis appropriately for a given research question.
   i) Carry out computer-based analyses for MR and interpret the results appropriately.
   j) Use spreadsheet and data analysis programs, including Excel and SPSS.

2: Research Methods in Advanced Statistics for Psychology
Understand, apply, and evaluate research methods in Psychology, including research design, advanced data analysis and interpretations, and the appropriate use of terminology.

Student learning outcomes:
   a) To develop a critical understanding of the major methods of research in psychology and how they relate to psychology as science.
   b) Ability to distinguish and evaluate research studies that focus on finding causality and/or prediction.
   c) Demonstrate an understanding of the conceptual link between ANOVA and MR analyses.
   d) Undertake statistical analysis appropriately.
e) Interpret statistical analyses correctly and competently depending on the research design and the postulated hypotheses.
f) Develop the ability to describe the key principles for designing and evaluating research focusing on behaviour change.
g) Evaluate and use relevant statistical terminology appropriately in psychological research.

3: Critical Thinking Skills in Advanced Statistics for Psychology
Use critical thinking to solve problems related to psychological inquiry.

Student learning outcomes:
   a) Demonstrate an attitude of critical thinking that includes persistence, open-mindedness, and intellectual engagement.
   b) Evaluate the quality of information, including differentiating empirical evidence from speculation.
   c) Evaluate issues of causality versus prediction using different theoretical and methodological approaches.
   d) Use reasoning and evidence to recognise, develop, defend, and criticise arguments based on research design and statistical analyses.
   e) Demonstrate a capacity for higher-order analysis, including the capacity to identify patterns in human and animal behaviour.
   f) Recognise and defend against erroneous research design and data analyses.
   g) Demonstrate creative and pragmatic problem solving.

4: Values in Advanced Statistics for Psychology
Value empirical evidence; act ethically and professionally.

Student learning outcomes:
   a) Promote evidence-based approaches to understanding behaviour.
   b) Be able to recognise problems associated with biased sampling methods.
   c) Recognise the limitations of psychological research methods.
   d) Exhibit a scientific approach to critically analysing human behavior.

5: Communication Skills in Advanced Statistics for Psychology
Communicate effectively in a variety of formats and in a variety of contexts.

Student learning outcomes:
   a) Interpret the results of statistical tests effectively using relevant terminology and formats.
   b) Learn to communicate the results of statistical tests effectively for a variety of purposes.

6: Learning and the Application of Advanced Statistics for Psychology
Understand and apply psychological principles to personal and social issues.

Student learning outcomes:
   a) Develop an awareness of the applications of the statistical theory and research design in psychology.
   b) Apply psychological research design to examine problems in everyday life and in society.
   c) Understand major issues involved in debates about research design in psychology.
   d) Demonstrate a capacity for independent learning to sustain personal and professional development in the changing world of the science and practice of psychology.
Syllabus:

Section 1: ANOVA and Contrasts

- The one-way fixed effects ANOVA model: partitioning variation and degrees of freedom. Expected mean squares and the formation of F ratios.
- Asking focused questions: testing contrasts. Planned orthogonal contrasts. Trend analysis.
- Controlling the Type I error rate with multiple comparisons: the Scheffé procedure and the Bonferroni procedure.
- Factorial designs: The two-way ANOVA model with fixed effects. Partitioning between-group variation into main effects and interaction effects. Main effect and interaction contrasts for a two way ANOVA design.
- Repeated measures or within-subject variables. Differing approaches to the analysis of repeated measures data. Planned contrasts for designs involving repeated measures data.
- Mixed designs: between-groups and within-subjects.

Section 2: Multiple Regression and Beyond

- Multiple Regression: Revision of simple linear regression model and introduction to multiple linear regression.
- Multiple independent variables, assumptions, estimates, and SPSS output.
- Causality vs prediction
- Different types of Multiple Regression.
- Categorical variables in multiple regression: dummy variables & interaction.
- Continuous variables: interaction & curves
- Moderation & mediation
- Matters of unreliability
- Beyond Multiple Regression: Introduction to path analysis and AMOS.
Lecture and Tutorial Program:

<table>
<thead>
<tr>
<th>WEEK</th>
<th>LECTURES (1 hour)</th>
<th>TUTORIALS (2 hours)</th>
<th>ASSESSMENTS</th>
</tr>
</thead>
</table>
| 1 (31/7 – 4/8) | 1. One-way ANOVA & the GLM  
2. NHST with mean difference contrasts | | |
| 2 (7/8 – 11/8) | 3. Orthogonality & Trend analysis  
4. Type I error control for planned contrasts | 1. One-way ANOVA & Mean difference contrasts | |
| 3 (14/8 – 18/8) | 5. Type I error control for post hoc contrasts  
6. Two-way ANOVA & the GLM | 2. Trend analysis & EER control | In-class Test 1 (5%)  
(L1-5, T1-2) |
| 4 (21/8 – 25/8) | 7. Main & interaction contrasts in Two-way ANOVA  
8. Interaction contrasts & Simple effects in Two-way ANOVA | 3. Two-way ANOVA revision | |
| 5 (28/8 – 1/9) | 9. Repeated measures I  
10. Repeated measures II | 4. Contrasts for Two-way ANOVA | |
| 6 (4/9 – 8/9) | 11. Repeated measures III  
12. Mixed designs | 5. Repeated measures | In-class Practical 1 (15%)  
(L1-12, T1-5) |
| 7 (11/9 – 15/9) | 13. Revision: ANOVA & Contrasts  
14. Simple linear regression (revisions) | 6. Mixed design | |
| 8 (18/9 – 22/9) | 15. Multiple Regression (MR): Introduction  
16. MR: More detail | 7. Simple linear regression | |
| Non-teaching week (25 – 29 September; no classes) | | | |
| 9 (2/10 – 6/10) | PUBLIC HOLIDAY: Monday 2 October  
17. MR: 3+ variables | No tutorials | |
| 10 (9/10 – 13/10) | 18. MR: Different Types  
19. MR: Categorical Variables & Interactions | 8. MR: Two Independent Variables | |
| 11 (16/10 – 20/10) | 20. MR: Categorical and continuous variables  
21. MR: Continuous variables, interactions & curves | 9. MR: 3+ variables & different types of MR | In-class Practical 2 (10%)  
(L14-19, T7-8) |
| 12 (23/10 – 27/10) | 22. Summary; Effects of unreliability; Path models  
23. Multiple Regression: Assumptions | 10. MR: Categorical & Continuous Variables | |
| 13 (30/10 – 3/11) | 24. Path models (cont.)  
25. Conclusions, research examples and revisions | 11. MR: Assumptions, Screening, Reliability | In-class Test 2 (10%)  
(L14-23, T7-10) |

Readings:
Section 1: ANOVA and Contrasts (weeks 1 – 6)

- Set Textbook:
  - No set textbook for this section
- Recommended:
Section 2: Multiple Regression and Beyond (weeks 7 – 13)

- Set Textbook:
  - OR
  - OR

- Recommended:

Library Readings

To find your set and recommended readings for this unit of study, look for “Unit of Study Readings” on the left menu of the eLearning site.

Software

Purchasing SPSS software is not essential for PSYC3010 (but if money is no object, it might be recommended for those wishing to continue with psychology. Note however that recent licencing arrangements for students are not generous, and from v19 only one-year licences are available). There are 2 versions that can be purchased at the Co-Op bookshop:
- the Standard Grad Pack, a fully-functioning version (23) of SPSS for Win/Mac (recommended); and
- the Base Grad Pack (formerly known as the Student version), a cut-down version (23) that is less expensive and is not suitable for PSYC3010 and beyond

Note that SPSS is available via the ICT Virtual Desktops located in the Access labs and University Libraries, and can also be accessed online through Bring Your Own Device (BYOD). SPSS is now up to version 24, but earlier versions are more than adequate.

Data Collection:

Note that your participation in this unit of study permits us to use your learning analytics to be used to improve your experience of learning.

Learning Management System (LMS) Access:

You are required to be given access to the eLearning site for this Unit of Study from the beginning of the week before semester begins. This document, and in particular details about assessment due dates, weightings and closing dates, must be available on that eLearning site from that time, and changes will not be made to these details throughout semester except in exceptional circumstances.

You are expected to check LMS regularly for lecture and tutorial notes, extra practice exercises, administrative notices, and other information and resources. The LMS site for PSYC3010 features a forum that you can use to discuss course content with your peers. This forum will be monitored by the PSYC3010 teaching staff.