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

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>Component</th>
<th>Available / Begins</th>
<th>Due</th>
<th>Closing date (no more submissions accepted)</th>
<th>Assessment Weighting</th>
<th>Compulsory</th>
<th>Assessment type</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-class test 1</td>
<td>Week 4</td>
<td>Week 4</td>
<td></td>
<td>10</td>
<td>No</td>
<td>Tutorial quiz or small test</td>
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<tr>
<td>In-class practical 1</td>
<td>Week 7</td>
<td>Week 7</td>
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<td>15</td>
<td>No</td>
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<tr>
<td>in-class test 2</td>
<td>Week 11</td>
<td>Week 11</td>
<td></td>
<td>10</td>
<td>No</td>
<td>Tutorial quiz or small test</td>
</tr>
<tr>
<td>In-class practical 2</td>
<td>Week 13</td>
<td>Week 13</td>
<td></td>
<td>15</td>
<td>No</td>
<td>Small continuous assessment</td>
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<tr>
<td>Exam</td>
<td>During Exam Period at End of Semester</td>
<td>University Final Results Release Date</td>
<td>50</td>
<td>Yes</td>
<td>Final exam</td>
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</table>

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, 15 – 19 August
- Based on lecture and tutorial material from weeks 1 – 3, inclusive.
- Multiple choice questions.
- Approved calculators are permitted. Students will need to be able to interpret SPSS output.

In-class Practical 1, Week 7, 5 – 9 September
- Based on lecture and tutorial material from weeks 1 – 6, inclusive.
- Combination of multiple choice and short-answer questions.
- Approved calculators are permitted. Students will need to be able to use SPSS and interpret SPSS output.

REGRESSION SECTION
In-class Test 2, Week 11, 10 – 14 October
- Based on lecture and tutorial material from weeks 7 – 10, inclusive.
- Multiple choice questions.
- Approved calculators are permitted. Students will need to be able to interpret SPSS output.

In-class Practical 2, Week 13, 24 – 28 October
- Based on lecture and tutorial material from weeks 7 – 12, inclusive.
- Combination of multiple choice and short-answer questions.
- Approved calculators are permitted. Students will need to be able to use SPSS and 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.

University of Sydney – Syllabus of PSYC3010, Semester 2, 2016
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.

**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:**

The in-Class Practical 1 in 2015 has been revised in 2016.

**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. Different types of Multiple Regression.
- Categorical variables in multiple regression: dummy variables, interaction.
- Continuous variables: interaction, moderation, mediation.
- Beyond Multiple Regression: Introduction to path analysis and AMOS.
Lecture and Tutorial Program:

<table>
<thead>
<tr>
<th>WEEK</th>
<th>DATE</th>
<th>LECTURES</th>
<th>TUTORIALS</th>
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<tbody>
<tr>
<td>1</td>
<td>25-Jul</td>
<td>1 GLM and ANOVA</td>
<td></td>
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<tr>
<td></td>
<td>27-Jul</td>
<td>2 Contrasts: Formulation and Testing</td>
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<tr>
<td>2</td>
<td>1-Aug</td>
<td>3 Contrasts: Orthogonality and Trend Analysis</td>
<td>ANOVA</td>
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<td></td>
<td>3-Aug</td>
<td>4 Contrasts: Adjusting for Type 1 Errors</td>
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<tr>
<td>3</td>
<td>8-Aug</td>
<td>5 Two-way ANOVA Model Part I</td>
<td></td>
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<tr>
<td></td>
<td>10-Aug</td>
<td>6 Two-way ANOVA Model Part II</td>
<td></td>
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<td>4</td>
<td>15-Aug</td>
<td>7 Two-way ANOVA: Interaction Contrasts</td>
<td>In-class Test 1 (10%) Contrasts</td>
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<tr>
<td></td>
<td>17-Aug</td>
<td>8 Repeated measures I</td>
<td></td>
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<tr>
<td>5</td>
<td>22-Aug</td>
<td>9 Repeated measures II</td>
<td></td>
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<tr>
<td></td>
<td>24-Aug</td>
<td>10 Contrasts for 2-way ANOVA designs</td>
<td></td>
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<tr>
<td>6</td>
<td>29-Aug</td>
<td>11 Mixed Designs I</td>
<td>Repeated Measures</td>
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<td></td>
<td>31-Aug</td>
<td>12 Mixed Designs II and Extensions</td>
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<tr>
<td>7</td>
<td>5-Sep</td>
<td>13 Simple Linear Regression I</td>
<td>In-class Practical 1 (15%) Mixed Designs</td>
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<td>7-Sep</td>
<td>14 Simple Linear Regression II</td>
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<td>12-Sep</td>
<td>15 Multiple Linear Regression I</td>
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<td>14-Sep</td>
<td>16 Multiple Linear Regression II</td>
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<td>19-Sep</td>
<td>17 Three types of Multiple Regression I</td>
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<td></td>
<td>21-Sep</td>
<td>18 Three types of Multiple Regression II</td>
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<td>3-Oct</td>
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<td></td>
<td>5-Oct</td>
<td>19 Categorical Variables in Multiple Regression</td>
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<td>11</td>
<td>10-Oct</td>
<td>20 Interaction I</td>
<td>In-class Test 2 (10%) Multiple Linear Regression II</td>
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<td>12-Oct</td>
<td>21 Interaction II</td>
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<td>12</td>
<td>17-Oct</td>
<td>22 Assumptions in Multiple Regression</td>
<td>Interactions</td>
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<td>19-Oct</td>
<td>23 Mediation</td>
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<td>13</td>
<td>24-Oct</td>
<td>24 Path Analysis</td>
<td>In-class Practical 2 (15%) Assumptions</td>
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<td>26-Oct</td>
<td>25 Revision</td>
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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
- Recommended:
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.

eLearning/Blackboard 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.