Psychological Statistics

Individual Differences

Personality

Sensation and Perception
201 - Psychological Statistics

Lecturer
Dr Margaret Charles
Room 635 Mungo Macallum

The course consists of one lecture (13) and a one-hour tutorial (12) each week. An outline of the semester’s program will be distributed in the first lecture. For most lectures, there is an accompanying handout of notes for the assistance of students. Tutorials will provide students with the opportunity to work through examples utilising the concepts introduced in lectures, and it is strongly recommended that students purchase the textbook in order to have access to further exercises. Appropriate references to the text and suggested exercises will be on the program to be handed out in the first lecture.

Statistics is a topic which cannot be crammed at the last minute, and for this reason assessments occur at regular intervals throughout the semester. Tests will be held at approximately monthly intervals through the teaching year (for exact dates, see handout in first lecture). Attendance at these tests is compulsory. Apart from the first test of the year, all tests are open book. There will be a practice test about a month into the semester, which does not count towards the final assessment. Marks from the two assessable tests together form the classwork component of the semester’s assessment. The overall assessment in statistics in each semester is comprised of 50% classwork, 50% examination. The examination consists of multiple choice questions and is held in the examination period at the end of each semester.

In Semester 1, the aim of the course is to introduce students to some of the fundamental concepts in statistics as used in Psychology. The use of descriptive statistics, such as the mean, variance and standard deviation is covered. An understanding of these concepts is necessary for the understanding of the useful properties of the normal curve and our use of z-scores and probability statements for locating individuals and scores within such distributions.

The rationale underlying the statistical tests of hypotheses is covered initially in overview, then developed via an explication of the concept of the sampling distribution of a statistic, and the use of the z-test for testing hypotheses about a single population mean.

Statistical hypothesis testing is a fallible procedure, and we will examine the errors which can be made in carrying out statistical inference procedures, and the power of the test, or the probability of detecting an effect if there is one. Alternatives to hypothesis testing, such as the effect size statistic and the use of confidence intervals, will also be covered.

A more realistic application of inferential statistics is introduced with the use of the t-test, where the population variance must be estimated. Some of the issues to be considered in designing experiments and interpreting results in the light of the internal validity of the experiment will be introduced.

201 - Individual and Group Differences in Cognitive Abilities - 13 lectures

Lecturer
Dr Lazar Stankov

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>Introduction to the study of individual differences in cognitive abilities. <em>Notes from the 1st Year Course in Intelligence. Gardner et al. Chapters 1 &amp; 2</em></td>
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<td>Week 2</td>
<td>Primary Mental Abilities and H. Gardner’s theory of Multiple Intelligences. <em>Sternberg: Chapter 11, Brody pp 34-40. Gardner et al. pages 202-214</em></td>
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<td>Week 3</td>
<td>The role of genetic and environmental factors: Some methodological issues. <em>Brody: Chapter 5.</em></td>
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<td>Week 5</td>
<td>Jensen’s neo-Spearmanian views: The role of genetics. <em>Brody: Chapter 5</em></td>
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*Emphasis on groups:*
| Week 6 | Intelligence within the educational sphere. *Brody: Chapter 9. Gardner et al. Chapter 8* |
| Week 7 | Giftedness and talent *Brody: Chapter 9.* |
| Week 8 | Intelligence in the workplace. *Brody: Chapter 9.* |
| Week 9 | Gender differences in intellectual abilities *Brody: Chapter 10.* |
| Week 10 | Racial, ethnic, and SES differences in intellectual abilities. *Brody: Chapter 10.* |
| Week 11 | The aging of human abilities *Brody: Chapter 8.* |
| Week 12 | Intelligence, social policies, fashions and epidemics. *Brody: Chapter 11. Stankov-Boyle-Cattel paper.* |
| Week 13 | Study of intelligence today and possible future trends |

*Note*
References supplementing each lecture are given in italics. They refer to the list below.

*Text*
While there is no text, the following four items are placed in Closed Reserve:
201 - Sensation and Perception - 13 lectures

Lecturers
Prof Ian Curthoys
Dr Rick van der Zwan
Dr John Predebon

The aim of this component is to give a deeper understanding of the material covered in sensory processes and perception in first year; to explain some of the psychophysical relationships between perceptual phenomena and stimulation, and how neural processes predict many perceptual phenomena. The basic neural mechanisms have much wider application than just perception, and such applications will be explored in this component.

Lectures 1-3 Professor Ian Curthoys
Revision of basic neuronal physiology and functional neuroanatomy. Techniques for relating brain function to sensation and perception. Brain imaging. MRI, fMRI, PET, SPECT. The application of these procedures in sensation, perception and cognition. Problems of interpretation of such information.

Neural mechanism of long term changes. Brain slice preparations for showing synaptic mechanisms underlying long-term change. Long term potentiation (LTP). Modifiable synapses and the mechanisms of such modification. NMDA receptors. Application of these results to behaviour. Examples of experimental studies in neuroscience.

Lectures 4-8 Dr Rick van der Zwan
Introduction to visual perception and the neurophysiology of the visual system. Brief revision of first year, particularly the visual pathways. A short discussion on the relationship between perception and awareness (the correlation between activity and awareness).


Organisation within visual cortical areas. Cortical mechanisms for object perception - colour, luminance, motion, and texture contours. Monocular vs. binocular vision and models of binocular integration. Binocular fusion and binocular rivalry.

Cortical development and the mechanisms of cortical plasticity. The determinants of the critical period and the effect of visual experience before and after. The effect of damage to the visual system after the critical period and what this implies about consciousness. Techniques for developmental studies.


Lectures 9-13 Dr John Predebon
Depth perception and binocular vision. Depth cues. Binocular disparity and stereopsis; the significance of Julesz patterns, the matching problem, local and global stereopsis.

Contemporary approach to form perception. Contrast and spatial frequency representation; contrast, spatial frequency, contrast sensitivity function (CSF); Fourier analysis and synthesis; applications of CSF (e.g., infant perception).

Perceptual stability and constancy (e.g., lightness perception). Constancy and illusions. The relationship between perception and visually directed action.

Perceiving movement. The image-retina and eye-head systems, outflow theory. Apparent movement; the Ternus effect. The aperture problem.

Texts
201 - Personality - 13 lectures

Lecturer
Mrs Olga Katchan
Mungo MacCallum room 634, ph 93512845

A. Sigmund Freud's Dynamic Model and the Psychoanalytic Heritage
1. Psychoanalytic conceptions of the components of personality and aspects of mental functioning.
   The concept of instinctual drive; motivational composition of the id, ego and superego.
   Theory of neuroses; the defense mechanisms.

2. Freud's account of the developmental stages; The oral, anal and phallic phases; the oedipus complex of males and females; fixation and regression.

3. Freud's work on fantasy and its impact on subsequent developments: The interpretation of dreams; jokes and their relation to the unconscious; Freud's view on art and creativity.

B. Dissentions
1. Carl Gustav Jung's Analytical Psychology

2. Jung's Heritage: Eysenck's biological typology

3. Alfred Adler's Individual Psychology

C. Extensions and Revisions
1. Erik Erikson's Psychosocial Perspective.

2. The Behavioural Approach: Dollard and Miller; Skinner

3. The Social Learning Approach: Albert Bandura

D. The Third Force
1. Abraham Maslow's Humanistic Perspective: Self-Actualisation Theory and the Hierarchy of Motives

Text