Description: Physiological Psychology

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<th>Subject</th>
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<th>Class</th>
<th>Term</th>
<th>Mode</th>
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<td>PSY</td>
<td>3090</td>
<td>34450</td>
<td>2, 2004</td>
<td>ONC</td>
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Academic group: FOSCI
Academic org: FOS005
Student contribution band: 1
ASCED code: 090701

STAFFING
Examiner: Malcolm Mills
Moderator: Gerry Tehan

REQUISITES
Pre-requisite: PSY1010 or STA2300 Co-requisite: PSY2040 or BIO2203 or NSC1931

OTHER-REQUISITES
Pre-requisite: Highly Recommended PSY2100

RATIONALE
Psychologists and neuroscientists need to appreciate the fundamental relationship between the mind and the body, specifically the nervous system and the brain, in order to fully understand the implications of the body’s structure and composition on behaviour. Clinical decisions will need to consider this too; and clinical presentations can occur in every aspect of psychological practice. Successful clinical psychology will also include an understanding of neuropsychology, which rests on many of the items herein. Understanding the experimental methodologies underscores the validity of the physiological interpretations that presently exist. This course provides students with an understanding of the influences that both biological factors and experiences have on human behaviour. Students will learn that material substances govern our thinking: that the mind and the brain are the same.

SYNOPSIS
The first three modules of the course examine the basic physiology of the brain and nerves: their structure, composition and the electro-chemical events that take place. Another module examines the techniques used to study and thereby understand the relevant physiology. The next three modules examine a number of classes of behaviours and evaluate the biological influences in these: sleep, emotions, and eating. Two further modules look at the physiology
of learning and memory and how the nervous system stores and retrieves useful information. The final three modules cover pathological psychophysiology: the study of physiological disorders affecting nerves, brain, feelings, mental development and ageing.

**OBJECTIVES**

On successful completion of this course students will be able to:

1. demonstrate knowledge of the anatomy, physiology, and function of the central nervous system; appreciate the mechanism of neurotransmitter action and its relationship with drugs; and, the relation of the internal hormonal environment to behaviour;
2. demonstrate an appreciation of the methods used to understand brain physiology and behaviour;
3. demonstrate an understanding of the relationship between hormones and nervous pathways and brain centres to sleep and emotional, eating and learning behaviours;
4. demonstrate knowledge of the relationship of pathophysiology to behaviour; how these relationships were discovered experimentally; and,
5. demonstrate thorough working knowledge of EEG and psychophysiological techniques.

**TOPICS**

<table>
<thead>
<tr>
<th>Description</th>
<th>Weighting (%)</th>
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<tbody>
<tr>
<td>1. Cells of the Nervous System: Neurones, Synapses &amp; Potentials</td>
<td>5.00</td>
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<td>2. Structure of the Nervous System: -Central: Brain Divisions, Spinal Cord; Peripheral Nerves</td>
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<td>3. Pharmacology: Drug action, neurotransmitters &amp; receptors</td>
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<td>4. Methods: Surgery, Histology, Electrophysiology, Neurochemistry &amp; Genetics</td>
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<td>5. Sleep: Physiology, Disorders and Body Clocks</td>
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<td>6. Emotion: Responses, Expression, Feelings &amp; Aggression</td>
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<tr>
<td>7. Ingestive Behaviour: Eating : Metabolism, Control &amp; Disorders</td>
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<td>8. Learning &amp; Memory: Synapses, Conditioning; Perceptual Learning</td>
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<td>9. Relational Learning and Amnesia: Brain Sites, Remembering</td>
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<td>10. Schizophrenia &amp; Affective Disorders: Depression &amp; Mania</td>
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<td>11. Anxiety Disorder, Autistic disorder &amp; Stress Disorder</td>
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<td>12. Drug abuse: Addiction, Reinforcement, Tolerance &amp; Withdrawal</td>
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<tr>
<td>13. Methodology and write-up of physiology experiments.</td>
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TEXT and MATERIALS required to be PURCHASED or ACCESSED:

ALL textbooks and materials are available for purchase from USQ BOOKSHOP (unless otherwise stated). Orders may be placed via secure internet, free fax 1800642453, phone 07 46312742 (within Australia), or mail. Overseas students should fax +61 7 46311743, or phone +61 7 46312742. For costs, further details, and internet ordering, use the 'Textbook Search' facility at http://bookshop.usq.edu.au click 'Semester', then enter your 'Course Code' (no spaces).


REFERENCE MATERIALS:

Reference materials are materials that, if accessed by students, may improve their knowledge and understanding of the material in the course and enrich their learning experience.


Suzuki, David 1997, *The Brain: Our Universe Within*, Discovery Channel, Bethesda. (Videorecording (two tapes, four programs), 612.82 Bra. USQ Psychology Library)


**STUDENT WORKLOAD REQUIREMENTS:**

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>HOURS</th>
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<tbody>
<tr>
<td>Assessment</td>
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<tr>
<td>Examinations</td>
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<tr>
<td>Private Study</td>
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**ASSESSMENT DETAILS**

<table>
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<th>Description</th>
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<th>Wtg(%)</th>
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<tbody>
<tr>
<td>ASSIGNMENT 1</td>
<td>20.00</td>
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<td></td>
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<tr>
<td>ASSIGNMENT 2</td>
<td>40.00</td>
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**NOTES:**

1. Assignment 1: EEG and data-logger operation and data collection.
3. Examination dates will be available during the Semester. Please refer to the examination timetable when published.

**IMPORTANT ASSESSMENT INFORMATION**

1. Attendance requirements:
   It is the students' responsibility to actively participate in all classes scheduled for them, and to study all material provided to them or required to be accessed by them to maximize their chance of meeting the objectives of the course and to be informed of course-related activities and administration. Must be available for two 3 hour session each of 12 teaching weeks to complete their training. These times will be rostered from experimental time slots taken by volunteer subjects.

2. Requirements for students to complete each assessment item satisfactorily:
To complete each of the assignments satisfactorily, students must obtain at least 50% of the marks available for each assignment.

3 Penalties for late submission of required work:
   If students submit assignments after the due date without prior approval then a penalty of 10% of the total marks available for the assignment will apply for each working day late.

4 Requirements for student to be awarded a passing grade in the course:
   To pass this course, students must obtain all marks in Assignment 1 and at least 50% of marks in assignment 2 and the examination to successfully compete the course.

5 Method used to combine assessment results to attain final grade:
   The final grades for students will be assigned on the basis of the weighted aggregate of the marks (or grades) obtained for each of the summative assessment items in the course.

6 Examination information:
   In a Closed Examination, candidates are allowed to bring only writing and drawing instruments into the examination.

7 Examination period when Deferred/Supplementary examinations will be held:
   Any Deferred examinations for this course will be held during the examination period at the end of the semester of the next offering of this course.

8 University Regulations:
   Students should read USQ Regulations 5.1 Definitions, 5.6. Assessment, and 5.10 Academic Misconduct for further information and to avoid actions which might contravene University Regulations. These regulations can be found at the URL http://www.usq.edu.au/corporateservices/calendar/part5.htm or in the current USQ Handbook.

ASSESSMENT NOTES

9 Access to email, discussion groups and the internet is a departmental requirement. Students will be expected to open their university provided email accounts and to check them regularly for personal communication. Information sent this way will be regarded as being received. [Note, other accounts often have more limited sized mail boxes, are not accessible when the USQ external connection is down and may not always remain open throughout student's candidature.]

10 The due date for an assignment is the date by which a student must despatch the assignment to the USQ. The onus is on the student to provide proof of the despatch date, if requested by the Examiner.

11 Students must retain a copy of each item submitted for assessment. This must be produced within two days if required by the Examiner.

12 The examiner may grant an extension of the due date of an assignment in extenuating circumstances.
OTHER REQUIREMENTS

1 Students will be trained in the operation of the department's 'Brain Atlas' EEG device. They will collect data from about 25 subjects. The experiment will be a study of learning a car (or aircraft) simulator. This will be an excellent lead-in to 4th year, and the data will be available for such a project. If successful, the candidate will receive a certificate of competency that states they can operate this machinery unsupervised. This could prove valuable to them. The student will also collect heart rate and skin conductance data as a measure sympathetic nervous activity.

2 To learn how to operate and collect data for an EEG machine. On successful completion of this course, a student will be capable of: * EEG Operation: setting up machine to collect data, preparing subject for the analysis, recording results and cleaning up subject; also collecting demographic data. Competency is described as being able to operate the EEG unsupervised. * Psychophysiological data collection: using a data-logger to collect heart rate and skin conductance data. * Data analysis: Transferring data to spreadsheet, summarising means of data into a topographic map. * Poster presentation: Writing a synopsis of the aim, method and displaying maps and plotting summary graphs.