Neuroscience 322
Semester One, 2011

Unit study package number: 301298 (v.3)
Mode of study: Internal
Tuition pattern summary: 5 contact hours per week
Credit value: 25

Pre-requisite Units:
8472 (v. 12) Physiology 231 or any previous version
8846(v. 8) Physiology 232 or any previous version
Must Satisfy: (1 AND 2)
301433 (v.5) BIO31 Our Internal Internet or any previous version

Anti-requisite Units:
302425 (v.2) Our Internal Internet - Its Structure and Function 304 or any previous version

Core Unit Status:
SIGNIFICANT: Fail this unit TWICE and it may lead to the termination of your course.

Result type:
Grade and Mark

Unit Co-ordinator: Name: Dr Marilyn BENNET-CHAMBERS
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Consultation times: Any time door is open.

Lecturer/Tutor: Name: Rebecca DAVIS
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Email: araneid@hotmail.com
Building : Room

Administrative contact: Name: Mrs Janette McLeod
Phone: (08) 9266 7374
Email: j.mcleod@curtin.edu.au
Building : Room Biomedical Sciences Building 308.122

Learning Management System: FLECS - Blackboard (oasis.curtin.edu.au)
Syllabus

Nervous system development, overview, plasticity, blood supply, meninges, CSF, receptors, somatosensation, visual, auditory vestibular perception, cortical, cerebellar and brainstem control of movement. Hypothalamus structure and role with autonomic nervous system function, control and interaction with cerebral function. The role of the limbic system in emotion, learning and memory. Behaviour, sleep & dreaming, hunger & thirst.

Introduction

Neuroscience involves the study of the nervous system, in particular the brain. It examines the structural organisation that underpins complex functional processes such as perception, behaviour, thoughts and emotions. This includes the molecular, cellular and system levels of function including the integrated processing of higher order functions. The human nervous system function is related to its evolution, embryology and development and finally how it adapts to the environment. This, in addition to some comparative analysis of other vertebrate nervous systems, offers the student an appreciation of how we monitor, perceive and subsequently react to our internal and external environments.

Unit Learning Outcomes

<table>
<thead>
<tr>
<th>Upon successful completion of this unit you will be able to:</th>
<th>Graduate Attributes addressed:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Categorise and identify the structural components of the nervous system, examine how integration of these components relate to neural function and dysfunction.</td>
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</tr>
<tr>
<td>2. Examine how information, from both the internal and external environment, is encoded, transmitted and processed by nervous system components including the role of plasticity in the adaption to a changing environment.</td>
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<tr>
<td>3. Apply scientific methods and techniques used in neuroscience research to demonstrate neurophysiological principles.</td>
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<tr>
<td>4. Identify inter-species differences in the nervous system and how this can be reflected in nervous system development.</td>
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<tr>
<td>5. Evaluate cortical input underpinning complex behaviours, including sleep, appetite/thirst, emotion and memory.</td>
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<tr>
<td>6. Critique current research literature in selected neuroscience topics</td>
<td></td>
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<tr>
<td>7. Design and implement an experimental protocol to answer research questions in the field of neuroscience.</td>
<td></td>
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</tbody>
</table>
Curtin's Graduate Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apply discipline knowledge</td>
<td>Use analytical skills to solve problems</td>
</tr>
<tr>
<td>Communication skills</td>
<td>Confidence to investigate new ideas</td>
</tr>
<tr>
<td>International perspective</td>
<td>Confidence to tackle unfamiliar problems</td>
</tr>
<tr>
<td>Thinking skills</td>
<td>Confidence to think critically</td>
</tr>
<tr>
<td>Technology skills</td>
<td>Confidence to use technology tools</td>
</tr>
<tr>
<td>Cultural understanding</td>
<td>Confidence to understand cultural concepts</td>
</tr>
<tr>
<td>Learning how to learn</td>
<td>Confidence to learn independently and as a team</td>
</tr>
<tr>
<td>Professional Skills</td>
<td>Confidence to plan work effectively</td>
</tr>
</tbody>
</table>

Find out more about Curtin's Graduate attributes at the Office of Teaching & Learning website: otl.curtin.edu.au

Learning Activities

Lectures: Provide you with the theoretical background of selected topics in neuroscience and will include examples from current research.

Practical sessions: Participate in experiments and activities that examine various concepts covered in the lectures. Participation is essential and data collected, or concepts covered, in these sessions is essential knowledge to answer the workbook assessment questions.

Tutorial sessions: Critique of relevant research papers and presentation of student seminars.

Learning Resources

Essential Texts
You will need to purchase the following textbook in order to complete this unit:


Recommended Texts
You do **not have to purchase** the following textbooks but you may like to refer to them.

Online Resources

1. **FLECS-Blackboard** – This will provide an electronic copy of the unit outline, due dates and relevant ethics formation. This material will only be accessible to students enrolled in the unit. ([http://lms.curtin.edu.au](http://lms.curtin.edu.au))

Assessment Schedule

<table>
<thead>
<tr>
<th>Task</th>
<th>Value (%)</th>
<th>Date due</th>
<th>Unit Learning Outcome(s) assessed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workbook 1: Weeks 1-5</td>
<td>20%</td>
<td>8th April, 2011</td>
<td>1, 2, 3, 4</td>
</tr>
<tr>
<td>Workbook 2: Weeks 6-11</td>
<td>20%</td>
<td>27th May, 2011</td>
<td>5, 6, 7</td>
</tr>
<tr>
<td>Neuroscience Project Literature Review</td>
<td>15%</td>
<td>20th May, 2011</td>
<td>1, 6</td>
</tr>
<tr>
<td></td>
<td>5%</td>
<td>23rd May, 2011</td>
<td></td>
</tr>
<tr>
<td>Final Examination</td>
<td>40%</td>
<td></td>
<td>1, 2, 4, 5</td>
</tr>
</tbody>
</table>

Detailed information on assessment tasks

1. **Workbook 1 (20%)**

The workbook will consist of short assignments based on practical exercises and paper critiques associated with lecture topics. It will include various aspects of scientific report writing; Introduction, materials & methods, results, discussion and reference lists. There will be word limits imposed and you will be provided a template in which to place your answers. Please note that if you do NOT attend the practical session associated with a topic then the question linked to that practical will NOT be assessed.

2. **Workbook 2 (20%)**

The workbook will consist of short assignments based on practical exercises and paper critiques & discussions associated with lecture topics. It will also include a fieldwork report, aspects of designing your own experiments, reporting results and discussions. There will be word limits imposed and you will be provided a template in which to place your answers. Please note that if you do NOT attend the practical session associated with a topic then the question linked to that practical will NOT be assessed.

3. **Neuroscience Project (20%)**

This written assignment and oral presentation will be focused on a review of the research in a specific area of nervous system dysfunction; physiological, anatomical, genetic and/or environmental causes. You can choose a topic after consultation with the unit coordinator. A list of suggested topics will be provided.

**Literature Review (15%)**

You will review the research in a particular area and formulate a sustained and logical argument that culminates in the development of research hypothesis/question. This is the purpose of a literature review. It is a critical analysis and synthesis of the information, leading into the research question.
Oral presentation (5%)
In this final activity you will present the review to the Department’s staff and students in class Monday 23rd May, 2011. This is usually a PowerPoint presentation and should include a brief overview of the logical arguments developed in your literature review and culminate in your research question.

Fair assessment through moderation
Moderation describes a quality assurance process to ensure that assessments are appropriate to the learning outcomes, and that student work is consistently evaluated by assessors. Minimum standards for the moderation of assessment are described in the Assessment Manual, available from policies.curtin.edu.au/policies/teachingandlearning.cfm

Late penalties
This ensures that the requirements for submission of assignments and other work to be assessed are fair, transparent, equitable, and that penalties are consistently applied.
1. All assessments which students are required to submit will have a due date and time specified on the Unit Outline.
2. Accepting late submission of assignments or other work will be determined by the unit coordinator or Head of School and will be specified on the Unit Outline.
3. If late submission of assignments or other work is not accepted, students will receive a penalty of 100% after the due date and time i.e. a zero mark for the late assessment.
4. If late submission of assignments or other work is accepted, students will be penalised by ten percent per working day for a late assessment submission (e.g. a mark equivalent to 10% of the total allocated for the assessment will be deducted from the marked value for every day that the assessment is late). This means that an assignment worth 20 will have two marks deducted per working day late. Hence if it was handed in three working days late and marked as 12/20, the student would receive 6/20. An assessment more than seven working days overdue will not be marked. Work submitted after this time (due date plus seven days) may result in a Fail - Incomplete (F-IN) grade being awarded for the unit.

Referencing style
Students should use the Chicago referencing style when preparing assignments. More information can be found on this style from the Library web site: library.curtin.edu.au/research_and_information_skills/referencing

Pass Requirements
In order to complete this unit for full credit towards your degree, you must complete all the assessments; Workbooks 1 & 2, Neuroscience Project both literature review and seminar presentation and a final theory exam. For details on the allocation of marks refer to page 3 of this outline.
Supplementary information

Enrolment and HECS:
It is your responsibility to ensure that your enrolment is correct - you can check your enrolment through the eStudent option on OASIS, where you can also print an Enrolment Advice.

Supplementary/Deferred Exams:
Supplementary and deferred examinations granted by the School of Biomedical Science will be held in the week beginning 4<sup>th</sup> July, 2011. Notification to students will be made after the your Schools’ Board of Examiners meeting via the Official Communications Channel (OCC) in OASIS (on welcome page- see Figure 1).

![Figure 1 OCC](image)

It is the student’s responsibility to check their OASIS account for official Curtin correspondence on a weekly basis. If your results show that you have been awarded a supplementary or deferred exam you should immediately check your OASIS email for details. Please note the following:

1. Your final results are NOT available until after your school's Board of Examiners meeting. This is held in the SECOND week AFTER the examination period. You CANNOT obtain your marks by calling your tutor or the unit coordinator, but must wait until the examinations office in central administration releases them in the week following the board meeting. These are published on the Curtin University website. Please do not contact us asking for your marks.

2. SUPPLEMENTARY and DEFERRED examinations are awarded only at the discretion of the Board of Examiners. It is your responsibility to be available at this time should a supplementary/deferred exam be awarded. No other time will be arranged.

Plagiarism

Plagiarism occurs when work, or property of another person, is presented as one’s own, without appropriate acknowledgement or referencing. Plagiarism is a serious offence. For more information refer to academicintegrity.curtin.edu.au

Plagiarism Monitoring
All written assessments, and literature review, will be monitored for plagiarism using Turnitin (see turnitin.com). Students who do not want assignments retained in the Turnitin database must lodge a special request prior to the submission date. For further advice see academicintegrity.curtin.edu.au/studentsturnitin.html
Student Rights and Responsibilities

It is the responsibility of every student to be aware of all relevant legislation, policies and procedures relating to their rights and responsibilities as a student. These include:

- the Student Charter
- the University's Guiding Ethical Principles
- the University's policy and statements on plagiarism and academic integrity
- copyright principles and responsibilities
- the University's policies on appropriate use of software and computer facilities

Information on all these things is available through the University's "Student Rights and Responsibilities" website at: students.curtin.edu.au/rights.

Recent unit changes

We welcome feedback as one way to keep improving this unit. Students are encouraged to provide unit feedback through eVALUate, Curtin's online student feedback system (see evaluate.curtin.edu.au/info/). Recent changes to this unit include: additional laboratory sessions to enhance learning through the application of knowledge in a ‘hands-on’ practical.

Academic problems

Students experiencing difficulties with the academic content of this unit should see the lecturer responsible for the subject matter presenting problems or the Unit Coordinator Dr M Bennet-Chambers, whose details appear on the front page of this unit outline.

Internet/FLECS-Blackboard access problems

Any problems associated with internet/FLECS-Blackboard access should be addressed to Randy Strack at: R.Strack@curtin.edu.au
### Program, Semester 1, 2011

**Lecture/Tutorial/Practical Sessions**  
Mondays 2-5pm 405.229/404 Anatomy Lab  
Tuesdays 11am-1pm in 405.229/404 Anatomy Lab/308 Histology Lab

<table>
<thead>
<tr>
<th>WEEK</th>
<th>WEEK BEGINNING</th>
<th>Monday 2pm-5pm</th>
<th>Tuesday 11am-1pm</th>
<th>CHAPTERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>21/02/11</td>
<td>Introduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>28/02/11</td>
<td>Overview of NS Developmental</td>
<td>Practical 1 NS Anatomy</td>
<td>RD:RD</td>
</tr>
<tr>
<td>2</td>
<td>07/03/11</td>
<td>Comparative neuroanatomy Cells of the NS</td>
<td>Practical 2 NS Cells</td>
<td>RD:RD</td>
</tr>
<tr>
<td>3</td>
<td>14/03/11</td>
<td>Motor pathways Spinal cord</td>
<td>Conduction velocity &amp; spinal reflexes lab</td>
<td>RD:RD</td>
</tr>
<tr>
<td>4</td>
<td>21/03/11</td>
<td>The chemical senses: Taste and smell</td>
<td>Somatosensation</td>
<td>MBC:RD</td>
</tr>
<tr>
<td>5</td>
<td>28/03/11</td>
<td>Vision &amp; Perception</td>
<td>Somatosensory practical</td>
<td>MBC:RD</td>
</tr>
<tr>
<td>6</td>
<td>4/04/11</td>
<td>Auditory perception: The nature of sound</td>
<td>ANS Blood supply</td>
<td>MR:RD</td>
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<td></td>
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<td>Auditory Illusion Workshop</td>
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<tr>
<td>7</td>
<td>11/04/11</td>
<td>Perception, Illusion &amp; detection of movement practical</td>
<td>ANS Practical Inc Blood supply</td>
<td>MBC:RD</td>
</tr>
<tr>
<td>8</td>
<td>18/04/11</td>
<td>Limbic System Learning, memory and emotions</td>
<td>Information Processing Fitts Task Lab</td>
<td>RD:MBC</td>
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<tr>
<td></td>
<td>25/04/11</td>
<td>EASTER BREAK</td>
<td></td>
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<tr>
<td>9</td>
<td>2/05/11</td>
<td>Behaviour</td>
<td>Neural Plasticity</td>
<td>MBC:RD</td>
</tr>
<tr>
<td>10</td>
<td>9/05/11</td>
<td>Habituation &amp; sensitization practical</td>
<td>Sleep &amp; dreaming</td>
<td>MBC:MBC</td>
</tr>
<tr>
<td>11</td>
<td>16/05/11</td>
<td>Visit to Perth Sleep Clinic QEII</td>
<td>Hunger &amp; thirst</td>
<td>MBC:MBC</td>
</tr>
<tr>
<td>12</td>
<td>23/05/11</td>
<td>Student seminars</td>
<td>Paper critique &amp; discussion Emotions</td>
<td>MBC &amp; RD</td>
</tr>
<tr>
<td>13</td>
<td>30/06/11</td>
<td>STUDY WEEK</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>6/07/11</td>
<td>EXAMINATIONS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>13/07/11</td>
<td>EXAMINATIONS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Key
- Green: Practical
- Purple: Lecture
- Orange: Tutorial