UNSW SYDNEY

FACULTY OF SCIENCE

SCHOOL OF OPTOMETRY AND VISION SCIENCE

OPTM7115

Visual Neuroscience

TERM 3

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Faculty of Science - Course Outline

1. Information about the Course

NB: Some of this information is available on the UNSW Handbook[1]

Year of Delivery	2019
Course Code	OPTM7115
Course Name	Visual Neuroscience
Academic Unit	School of Optometry and Vision Science
Level of Course	PG course
Units of Credit	6UOC
Term(s) Offered	Term 3
Assumed Knowledge, Prerequisites or Co-requisites	Prior undergraduate degree in optometry
Hours per Week	2 hours per week lectures 1-2 hours tutorials 3 hours own time per week
Number of Weeks	10
Commencement Date	**TBA**

Summary of Course Structure (for details see 'Course Schedule')

Component	HPW	Time	Day	Location
Lectures	2	TBA	TBA	
		TBA	TBA	
Tutorials/Labs	2	TBA	TBA	
TOTAL	4			
Special Details	*NA*			

2. Staff Involved in the Course

Staff	Role	Name	Contact Details	Consultation Times
Course Convenor		Sieu Khuu	s.khuu@unsw.edu.au	By appointment
Additional Teaching Staff	Lecturers & Facilitators	TBA		
	Tutors & Demonstrators	TBA		
	Technical & Laboratory Staff			
	Other Support Staff			

[1] UNSW Online Handbook: http://www.handbook.unsw.edu.au

3. Course Details

Course Description[2] (Handbook Entry)	This course provides understanding of the issues of visual functioning, which will also be related to clinical assessment issues. Topics covered include: processing of visual information in mammals, objective assessment of visual pathway, review of brainstem and brainstem anatomy, visual attention and arousal systems, brainstem mechanisms in the control of eye movements, visually directed activities - reading, parietal factors in vision, frontal factors in vision, after effects and inter-ovular transfers.
Course Aims[3]	The course aims to equip optometrist with a solid platform of knowledge, to generate interest in the function of the visual system and the manner in which the visual brain function can be measured and assessed.
Student Learning Outcomes[4]	On completion of this course, it is expected that participants would look for the evidence supporting statements, techniques, and claims encountered in optometric and clinical practice. Participants will be familiar with the source of this specialized knowledge, and how to assess the data.

Graduate Attributes Developed in this Course[5]

Science Graduate Attributes[5]	**Select the level of FOCUS** *0 = NO FOCUS* *1 = MINIMAL* *2 = MINOR* *3 = MAJOR*	**Activities / Assessment**
Research, inquiry and analytical thinking abilities	3	The criteria for assessment include critical reading of literature, and evidence of this task being presented in discussions.
Capability and motivation for intellectual development	3	Intellectual development is implicit in the assessment tasks of this course, in which the participant will present his/her views of the evidence under discussion.
Ethical, social and professional understanding	3	The course raises the participant's awareness of the ethical issues and social implications in the use of evidence to support claims and techniques.
Communication	2	Assessment tasks involve discussion, debate, presentation and practical sessions.
Teamwork, collaborative and management skills	2	Participants will be involved in regular (3/4 hours per week) group work and presentations
Information literacy	3	Literature search is the backbone of the course. Participants will search the literature for types of evidence, and learn to critique and evaluate this evidence.

[2] UNSW Handbook: http://www.handbook.unsw.edu.au
[3] Learning and Teaching Unit: Course Outlines
[4] Learning and Teaching Unit: Learning Outcomes
[5] Contextualised Science Graduate Attributes: http://www.science.unsw.edu.au/our-faculty/science-graduate-attributes

Major Topics (Syllabus Outline)	Overview of the visual system and its neural pathways Assessment of visual pathway function Kinetic and Static visual field Changes to visual function due to exposure to organic solvents Spatial uncertainty and its impact on visual function and measurement Higher order perception of motion and self-motion
Relationship to Other Courses within the Program	Some aspects of this course are related to Behavioural Optometry courses OPTM7103 and OPTM7203, although participants are not expected to attend either of these courses.

4. Rationale and Strategies Underpinning the Course

Teaching Strategies	Teaching methods in this course allow students to develop knowledge and understanding of important topics in neuroscience. Analysis of the evidence will make up the central feature of the discussions; and it is hoped that this approach would lead the students to develop further interest in these areas of vision science.
Rationale for learning and teaching in this course[6,7]	To ensure an active involvement in literature search and critique, as well as learning to work with others to gather evidence and evaluate its significance.

[6] Reflecting on your teaching

5. Course Schedule

Week	Lectures (day), Topics & Lecturers	Tutorials (day), Topics & Lecturers	Practical (day), Topics & Lecturers	Assignment and Submission dates (see also 'Assessment Tasks & Feedback')
Week 1	**Introduction to the perceptual system and visual neuroscience:** Course overview and expectations	**No tutorials**		Vision Science Essay released, group presentations topics released on Moodle
Week 2	**The Visual System 1**: Pathways, visual maps and retinotopic arrangement	**Journal club 1** Read: Livingstone, M.S., Hubel, D.H. (1988) Segregation of form, color, movement, and depth: anatomy, physiology, and perception. Science, 240, 740-749.		
Week 3	**The Visual System 2:** Beyond Striate Cortex: Form and motion processing streams	**Journal club 2** Read: Goodale, M. A., & Milner, A. D. (1992) Separate visual pathways for perception and action. Trends in Neurosciences, 15, 20-25.		Paper review 1 due
Week 4	**Visual Cognition and Attention 1:** Attentional processes in the brain		Measuring sensitivity to global form and motion in SOVS computer lab	Paper review 2 due
Week 5	**Visual Cognition and Attention 2:** Visual awareness and consciousness	**Journal club 3** Read**:** van Boxtel, J., Tsuchiya, N., & Koch, C. (2010). Consciousness and attention: On sufficiency and necessity. Frontiers in Psychology, 1(217). doi: 10.3389/fpsyg.2010.00217		
Week 6	**Measuring the Perceptual system 1:** Spatial uncertainty and cueing in visual field testing		Measuring visual search and attention in SOVS computer lab	Paper review 3 due
Week 7	**Colour Perception**	**Journal club 4** Read: Palmer: 187-192 Yantis, Chapter 5 Norton, Chapter 8; Palmer, sections 3.2.2 and 3.2.3.	Measuring spatial uncertainty and visual field function in SOVS computer lab	
Week 8	**Measuring the Perceptual system 2:** Colour Vision		Measuring colour detection in SOVS computer lab	Research essay due
Week 9	**Measuring the Perceptual System 3:** Visual Fields, Static and Kinetic Perimetry, Stato-kinetic dissociation	**Journal club 5** Read: Phu, J., Al-Saleem, N., Kalloniatis, M., & Khuu, S. K. (2016). Physiologic statokinetic dissociation is eliminated by equating static and kinetic perimetry testing procedures Journal of Vision, 16(14):5, 1–17, doi:10.1167/16.14.5.		
Week 10	**Group Presentations**	**No tutorials**	Measuring kinetic and static visual field function in SOVS computer lab	Paper review 4 due

6. Assessment Tasks and Feedback

Task	Knowledge & abilities assessed	Assessment Criteria	% of total mark	Date of		Feedback		
				Release	Submission	WHO	WHEN	HOW
Paper review (600 words each)	Application of knowledge to devise a research question and to address it in experimental work	Ability to communicate your thoughts in writing and summarise and analyse experimental work.	30 %		Weeks 3,4,6 and 10	*Sieu Khuu*	*TBA*	Marks and written feedback
Written Essay (2000 words)	A thorough knowledge of a topic in vision science, derived from a critical understanding of the approaches aimed at reversing visual pathway dysfunction	Ability to communicate your thoughts in writing.	40 %	Week 1	Week 9	*Sieu Khuu*	*TBA*	Marks and written feedback
Presentation	Demonstration of a good understanding of the topic.	Ability to explain and discuss. Understanding of critical thinking and evidence- based practice. Understanding of the ethical issues involved, and ability to find and assess evidence.	30 %	Week 1	Exam period	*Sieu Khuu*	*TBA*	Marks and written feedback

[10] Approaches to assessment: http://teaching.unsw.edu.au/assessment

7. Additional Resources and Support

Text Books	There is no set textbook, but students may find the following references useful: Norton, T., Corliss, D., & Bailey, J.E. (2002). The Psychophysical Measurement of Visual Function. London, Butterworth-Heinemann. Available in the University Bookshop. Kaufman, P.L., & Alm, A. (2002). Adler's Physiology of the Eye 10th edition. St Louis, Mosey. Palmer, S.E. (1999). Vision Science: Photons to Phenomenology, Cambridge, Mass: MIT Press. Available in the University Bookshop. Sekuler, R. & Blake, R. (2002). Perception (4th ed), New York: McGraw-Hill Marr, D. (1982). Vision. San Francisco, W.H Freeman and Company. Graham, N.V.S. (1989). Visual Pattern Analyzers. New York, Oxford University Press. De Valois, R.L.L., & De Valois, K.K. (1988). Spatial Vision. New York, Oxford University Press. Bruce, V., Green, P.R., & Georgeson, M.A., (1996). Visual Perception, Physiology, Psychology and Ecology, 3rd edition. Exeter UK, Psychology Press. Levine, M.W. (2000). Fundamentals of Sensation and perception, 3rd edition New York, Oxford University Press.
Course Manual	*None*
Required Readings	Relevant research articles relating to talks given by guest lecturers will be provided during the course.
Additional Readings	*None*
Recommended Internet Sites	http://visionscience.com/ Look under the 'demonstrations' link in particular http://www.michaelbach.de/ot/ This is a great web site, with fascinating visual illusions http://viperlib.york.ac.uk/ A extensive data base of visual illusions, pictures and learning material
Societies	None
Computer Laboratories or Study Spaces	Students may use the optometry and vision science computer laboratory in Old Main Building 228 (K-K15-228)

8. Required Equipment, Training and Enabling Skills

Equipment Required	None
Enabling Skills Training Required to Complete this Course	None

9. Course Evaluation and Development

Student feedback is gathered periodically by various means. Such feedback is considered carefully with a view to acting on it constructively wherever possible. This course outline conveys how feedback has helped to shape and develop this course.

Mechanisms of Review	Last Review Date	Comments or Changes Resulting from Reviews
Major Course Review		This course has not been offered since 2012. At the end of semester student feedback will be sought to help revise the course.
myExperience[11]		2018 CATEI – 6/6 indicating that students were satisfied with the course
Other		

[11] **CATEI process:** http://www.science.unsw.edu.au/our-faculty/course-and-teaching-evaluation-and-improvement-catei

10. Administration Matters

Expectations of Students	It is expected that students attend all classes and tutorials. The pass mark for the course is 50 % The University uses email as an official form of communication for students. All UNSW students have their own email account. The School of Optometry and Vision Science will also make use of this form of communication. It is extremely important that you know how to use your Zmail and ensure that you check it regularly. You are advised to link your official UNSW email address to your habitual email address (e.g. hotmail). You will miss out on vital information from the School and University if you do not check your Zmail. For more information or if you are having connection or access problems, see: IT Service Centre www.it.unsw.edu.au/ Telephone: 02 9385 1333 Email: itservicecentre@unsw.edu.au
Assignment Submissions	Assignments should be submitted via Moodle (electronic submission). This includes completed laboratory reports and logs which should be scanned/photographed and submitted via Moodle. If your assignment requires submission of a pair of glasses/contact lenses, these may be submitted via the Assignment submission box at the Student Enquiry office (North Wing, Rupert Myers Building, Room 3.003), however the accompanying report should be submitted via Moodle. Marked assignments can be collected from the: • School Enquiry office **during counter opening hours**. You must show a valid student card to do this. The School Policy on Submission of Assignments (including penalties for late assignments) and the Assignment Attachment Sheet are available from the School office (RMB3.003) and the School website at: http://www.optometry.unsw.edu.au/current/policies-and-procedures

Work Health and Safety[12]	*Information on relevant Occupational Health and Safety policies and expectations both at UNSW and if there are any school specific requirements.* Information on relevant policies and expectations is provided during General Safety Induction training. A copy of the Induction booklet distributed at this training is available from the School of Optometry and Vision Science office (RMB3.003) and the School website at: https://www.optometry.unsw.edu.au/whs/work-health-and-safety
Assessment Procedures **UNSW Assessment Policy**[13]	**SCHOOL OF OPTOMETRY AND VISION SCIENCE, UNSW** **SUPPLEMENTARY EXAMINATION INFORMATION, 2019** There are two circumstances whereby a supplementary examination may be granted: **COMPETENCY IN DOUBT** Students whose competency level is in doubt after the final examination(s) may be eligible to sit a supplementary examination in the course(s) concerned. Please check the School website for this information. **SPECIAL CONSIDERATION** On some occasions, sickness, misadventure or other circumstances beyond your control may prevent you from completing a course requirement, such as attending a formal end of semester

[12] UNSW OHS Home page
[13] UNSW Assessment Policy
[14] Student Complaint Procedure

examination. In these cases you may apply for Special Consideration. To do this you must make formal application for Special Consideration for the course/s affected as soon as practicable after the problem occurs and **within three working days of the assessment to which it refers**. The application must be made via Online Services in myUNSW. Log into myUNSW and go to My Student Profile tab > My Student Services > Online Services > Special Consideration. Submit the application (including supporting documentation) to UNSW Student Central.

Special Consideration - Pre-Existing Conditions

Many conditions that are the subject of special consideration applications are pre-existing and could be used repeatedly to gain examinations at a later date. These include conditions aggravated or triggered by the stress of the assessment. With the help of your doctor and/or other health care practitioners, steps can be taken ahead of the assessment time to minimise or avoid the consequences of these conditions. When applying for special consideration on the basis of a condition that was already known to be a problem for you and which you have already used as the basis for a special consideration application, the School will require you to provide a certificate that details the preventative measures taken and why they were not successful. This will then be taken into account when considering the application.

Absence from a final examination is a serious matter, normally resulting in a Fail (FL) grade. **If you are medically unfit to attend an examination, YOU MUST CONTACT THE SCHOOL DIRECTLY ON THE DAY OF THE EXAMINATION TO ADVISE OF THIS** (telephone 02 9385 4639, email: optometry@unsw.edu.au). You must also submit a Request for Special Consideration application as detailed above.

You are reminded that supplementary examinations are not granted lightly or automatically. Eligibility for supplementary examinations, for both of the above situations, is determined by the School Examination Committee, which meets soon after the formal examination period has ended. You cannot "apply" for a supplementary examination, so please do not contact the School or Course Controllers to request a supplementary examination.

It is the responsibility of the student to consult the web site or noticeboard to ascertain whether they have supplementary examinations. This information WILL NOT be conveyed in ANY other manner. Interstate, overseas or any other absence cannot be used as an excuse.

This information will be available on the School web site at https://www.optometry.unsw.edu.au (do not confuse the School website with the myUNSW website) and posted on the notice board on Level 3. This information will be available as soon as possible after the School Examination Committee meeting.

SUPPLEMENTARY EXAMINATIONS FOR 2019 WILL BE HELD AS FOLLOWS:

FOR TERM 1:

- **STAGE 1-4* COURSES: Friday May 24th to 31st**
- **THERE WILL BE NO SUPPLEMENTARY EXAMINATIONS FOR STAGE 5 STUDENTS IN TERM 1 2019**

FOR TERM 2:

- **STAGE 1-4* COURSES: Friday September 6th to 13th**
- **THERE WILL BE NO SUPPLEMENTARY EXAMINATIONS FOR STAGE 5 STUDENTS IN TERM 2 2019**

FOR TERM 3:

- **STAGE 1-4* COURSES: end of December or early January (TBA)**
- **STAGE 5 COURSES: end of December or early January (TBA)**

Supplementary examinations will be held at the scheduled time only. If students who are granted supplementary examinations do not attend, a failure will be recorded for that course. **Students should not make travel arrangements, or any other commitments, before establishing whether or not they have supplementary examinations. Ignorance of these procedures, interstate, overseas or any other absence will not be accepted as an excuse. But usual Special Consideration for illness still applies.**

If additional assessment is not scheduled, this does NOT indicate whether or not a student has passed or failed the course. Results will be received in the usual way. Please do not contact the School in this regard.

Please note the above applies to OPTM and VISN courses only. Any information on supplementary examinations for servicing courses (e.g. CHEM****) is the responsibility of the School conducting the course.

	* Stage 4 includes courses in the first year of the MClinOptom program.		
Equity and Diversity	Those students who have a disability or are dealing with personal circumstances that affect their study that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course Convenor prior to, or at the commencement of, their course, or with the Equity Officer (Disability) in the Equity and Diversity Unit (9385 4734 or http://www.studentequity.unsw.edu.au/). Issues to be discussed may include access to materials, signers or note-takers, the provision of services and additional exam and assessment arrangements. Early notification is essential to enable any necessary adjustments to be made. *Information on designing courses and course outlines that take into account the needs of students with disabilities can be found at:* https://teaching.unsw.edu.au/accessibility-tips		
Student Complaint Procedure[14]	**School Contact**	**Faculty Contact**	**University Contact**
	Prof. Helen Swarbrick h.swarbrick@unsw.edu.au Tel: 9385 4373	A/Prof Janelle Wheat Deputy Dean (Education) j.wheat@unsw.edu.au Tel: 9385 0752 Or Dr Gavin Edwards Associate Dean (Academic Programs) g.edwards@unsw.edu.au Tel: 9385 4652	Student Integrity Unit (SIU) Telephone 02 9385 8515, email studentcomplaints@unsw.edu.au

University Counselling and Psychological Services[15]	Information on Counselling and Psychological Services [CAPS] is available at: https://www.counselling.unsw.edu.au/ Tel: 9385 5418

[15] University Counselling and Psychological Services

11. UNSW Academic Honesty and Plagiarism

What is Plagiarism?

Plagiarism is the presentation of the thoughts or work of another as one's own.
*Examples include:

- direct duplication of the thoughts or work of another, including by copying material, ideas or concepts from a book, article, report or other written document (whether published or unpublished), composition, artwork, design, drawing, circuitry, computer program or software, web site, Internet, other electronic resource, or another person's assignment without appropriate acknowledgement;
- paraphrasing another person's work with very minor changes keeping the meaning, form and/or progression of ideas of the original;
- piecing together sections of the work of others into a new whole;
- presenting an assessment item as independent work when it has been produced in whole or part in collusion with other people, for example, another student or a tutor; and
- claiming credit for a proportion a work contributed to a group assessment item that is greater than that actually contributed.†

For the purposes of this policy, submitting an assessment item that has already been submitted for academic credit elsewhere may be considered plagiarism.

Knowingly permitting your work to be copied by another student may also be considered to be plagiarism.

Note that an assessment item produced in oral, not written, form, or involving live presentation, may similarly contain plagiarised material.

The inclusion of the thoughts or work of another with attribution appropriate to the academic discipline does *not* amount to plagiarism.

The Learning Centre website is main repository for resources for staff and students on plagiarism and academic honesty. These resources can be located via:

https://student.unsw.edu.au/plagiarism

The Learning Centre also provides substantial educational written materials, workshops, and tutorials to aid students, for example, in:

- correct referencing practices;
- paraphrasing, summarising, essay writing, and time management;
- appropriate use of, and attribution for, a range of materials including text, images, formulae and concepts.

Individual assistance is available on request from The Learning Centre.

Students are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting, and the proper referencing of sources in preparing all assessment items.

* Based on that proposed to the University of Newcastle by the St James Ethics Centre. Used with kind permission from the University of Newcastle
† Adapted with kind permission from the University of Melbourne