Course Outline

PSYC3221

Vision and Brain

School of Psychology

Faculty of Science

T1, 2021

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1. Staff

Position	Name/ Email	Consultation times and locations	Contact Details
Course Convenor	Prof Colin Clifford colin.clifford@unsw.edu.au	Email for questions or appointments, or consult during synchronous online sessions.	Mathews 1013
Lecturer	Prof Colin Clifford colin.clifford@unsw.edu.au	Email for questions or appointments, or consult during synchronous online sessions.	Mathews 1013
Lecturer	Dr Colin Palmer colin.palmer@unsw.edu.au	Email for questions or appointments, or consult during synchronous online sessions.	Mathews 1015
Lecturer	Prof Branka Spehar b.spehar@unsw.edu.au	Email for questions or appointments, or consult during synchronous online sessions.	Mathews 715
Tutor	Ms Catherine Viengkham c.viengkham@unsw.edu.au	Email for questions or appointments, or consult during tutorials.	

2. Course information

Units of credit:	6
Pre-requisite(s):	PSYC2071 Perception and Cognition PSYC2001 Research Methods 2
Teaching times and locations:	PSYC3221 Timetable

2.1 Course summary

"Attempts to construct computer models for the recognition and interpretation of arbitrary scenes have resulted in such poor performance, limited range of abilities and inflexibility that, were it not for the human existence proof, we may have been tempted long ago to conclude that high performance, general purpose vision is impossible." (Barrow & Tannenbaum, 1971).

Although written nearly 50 years ago, the above statement is still pertinent and relevant today: while seemingly effortless, human visual perception is a complex achievement taking up 40% of the entire cortex. In this course, the problem of visual processing will be considered from ecological, physiological, philosophical, and computational perspectives. The general orientation of the course is a theoretical one but applied aspects such as the role of basic perceptual processes in disorders such as autism and schizophrenia, and the implications for the design of effective visual displays will be discussed as well.

2.2 Course aims

The main objective of this course is to provide an advanced-level coverage of theoretical issues and research in visual perception with an emphasis on the interdisciplinary nature of the scientific study of perceptual processes. It will require students critically to evaluate theoretical claims and empirical evidence about perceptual processes and to develop skills to conduct research and communicate scientific information in visual perception.

2.3 Course learning outcomes (CLO)

At the successful completion of this course, it is expected that you will be able to:

1. Demonstrate an advanced knowledge and understanding of historical theoretical views and modern advances in the study of vision and visual perception.
2. Apply an advanced knowledge of research methods in visual perception enabling you to design and conduct studies of perceptual processing.
3. Demonstrate advanced critical thinking skills, enabling you to evaluate perceptual processes and phenomena from multiple theoretical perspectives and methodological approaches.
4. Demonstrate an advanced appreciation of values and professional ethics in research.
5. Demonstrate effective teamwork and scientific communication skills.
6. Understand and apply knowledge of visual processing in other domains such as clinical disorders, social cognition and artificial vision.

2.4 Relationship between course and program learning outcomes and assessments

	Program Learning Outcomes – Related Activities						
CLO	1. Knowledge	2. Research Methods	3. Critical Thinking Skills	4. Values and Ethics	5. Communication, Interpersonal and Teamwork Skills	6. Application	**Assessment**
1	Lectures, Tutorials, Online Perception Modules		Lecture, Tutorials, Online Perception Modules	Lecture, Tutorials, Novel Group Project		Novel Group Project	Exams, Novel Research Project Group Presentation, Novel Research Project Individual Research Report
2		Tutorials: Novel Research Group Project					Novel Research Project Group Presentation, Novel Research Project Individual Research Report
3	Lectures, Tutorials, Online Perception Modules	Tutorials: Novel Research Group Project	Lecture, Tutorials, Novel Research Group Project, Online Perception Modules	Tutorials, Novel Group Project		Lectures, Tutorials, Online Perception Modules	Exams, Novel Research Project Group Presentation, Novel Research Project Individual Research Report
4				Lecture, Tutorials, Novel Research Group Project			Novel Research Project Group Presentation, Novel Research Project Individual Research Report
5					Tutorials, Novel Research Group Project		Novel Research Project Group Presentation, Novel Research Project Individual Research Report
6	Lectures, Online Perception Modules		Lectures, Online Perception Modules			Lecture, Tutorials, Novel Research Group Project	Exams, Novel Research Project Individual Research Report

3. Strategies and approaches to learning

3.1 Learning and teaching activities

This course provides an advanced treatment of theoretical, physiological and computational approaches in the study of visual perception. It follows on, and assumes knowledge, from PSYC2071 Perception and Cognition or a similar introductory coverage of perception.

The two, one-hour lectures each week will be used to provide students with an advanced coverage of a selected number of topics within the fields of perception and visual neuroscience as well as implications for a number of diverse areas ranging from design to advertising and human factors. Lectures will be delivered on-line. A pre-recorded video of each lecture will be made available on the course website located at the UNSW Moodle server (moodle.telt.unsw.edu.au) in the week before it is scheduled, as well as a document containing a copy of the lecture slides. The timetabled lecture slots will be run by the lecturer as on-line Question & Answer sessions. Students are strongly advised to listen to the lectures ahead of time to ensure that they get the most out of these Question & Answer sessions. Please note that due to copyright restrictions it is not always possible to post copies of all of the materials covered in lectures. Consequently, do not rely on these as your main source of information regarding lecture material.

The laboratory classes are designed to allow opportunities for in-depth and active learning of research methods in perception and development of oral and written presentation skills. All lectures and tutorials encourage an interactive style with questions being asked, and expected, in order to promote reflective and active learning. The teaching employs a variety of different methods and encourages students to take responsibility for their own learning and to work cooperatively.

The design of the structure, content and assessment of this course has been informed by the policy document “Guidelines on learning that inform teaching at UNSW” (see https://teaching.unsw.edu.au/guidelines). Attendance at tutorials and timely completion of online tasks is essential in accordance with UNSW Assessment Implementation Procedure.

In addition to the Question & Answer sessions, the General Discussion Forum on Moodle provides students with an opportunity to question and clarify the concepts and ideas mentioned in the lectures. Students are strongly encouraged to engage with this forum by posting questions or comments, and reading, answering, or replying to other students’ posts to enhance understanding of the content, critical thinking, and written communication skills.

3.2 Expectations of students

It is expected that students are aware of UNSW Assessment policy and understand how to apply for special consideration if they are unable to complete an assignment/exam due to illness and/or misadventure.

It is expected that students have read through the School of Psychology Student Guide – T1 2021.

All news updates and announcements will be made on the ‘Announcements’ forum on the Moodle page and/or by email. It is the student’s responsibility to check Moodle and their student emails regularly to keep up to date. All students must read the Course Outline.

The final exam for this course will take place on-line during the UNSW examinations period.

Students registered with Equitable Learning Services must contact the course co-ordinator immediately if they intend to request any special arrangements for later in the course, or if any special arrangements need to be made regarding access to the course material. Letters of support must be emailed to the course coordinator as soon as they are made available.

4. Course schedule and structure

Component	Class Number	Weeks	Day	Time	Location
Lectures	5493	1-5, 7, 9-10	Monday	13:00-14:00	Online
		1-5, 7-10	Wednesday	09:00-10:00	Online
Tutorials/Labs	5497	2-5, 7-10	Tuesday	14:00-16:00	Online
	5495	2-5, 8-10	Friday	11:00-13:00	Mathews 104

Online lectures start in Week 1 (first lecture on Monday 15/02/2021) and finish in Week 10 (last lecture on Wednesday 21/04/2021) with NO lectures in Week 6.

Laboratory classes run from Week 2 until Week 10, with NO classes in Week 6.

NB. Course timetables are subject to change without notice and students are advised to check regularly for updates on the Moodle course site.

Each week this course typically consists of 2 hours of on-line lectures, 2 hours of Question & Answer sessions, and 2 hours of tutorials. Students will be expected to engage in additional 6 hours of self-determined study per week across the term to complete course readings, assessments, and exam preparation.

Week	Lecture topic/s	Tutorial/lab topics	Online materials	Self-determined activities
Week 1 15/02/2021 & 17/02/2021	MON: The nature of perceptual processing and fundamental challenges (Branka) WED: Why do things look the way they do? - Theoretical approaches to perception- Part 1 (Branka)		Sebastian Seung: I am my connectome TED talk – TED.com	Readings: van Tonder & Ejima (2000) Mather (2011)
Week 2 22/02/2021 & 24/02/2021	MON: Why do things look the way they do? - Theoretical approaches to perception- Part 2 (Branka) WED: Vision and the Coding of Natural images: Part 2 (Branka)	Selecting, implementing, and analysing a research project	Donald Hoffman: Do we see reality as it is? TED talk – TED.com Coding of Natural Images Quiz	Readings: Hoffman (2016) Gilchrist (2006) Olshausen & Field (2003)
Week 3 01/03/2021 & 03/03/2021	MON: Scale-Specific Visual Processing Part 1 (Branka) WED: Scale-Specific Visual Processing Part 2 (Branka)	How to prepare a group poster presentation	Scale-specific Visual Processing Quiz	Readings: Kauffmann et al (2014) Oliva & Torralba (2007)
Week 4 08/03/2021 & 10/03/2021	MON: Adaptation Part 1 - Perceptual Aftereffects (Colin C.) WED: Adaptation Part 2 - Physiology & Function (Colin C.)	Group Research Project Proposal Presentations		Readings: Webster (2011) Clifford (2014)
Week 5 15/03/2021 & 17/03/2021	MON: Motion Processing Part 1 – Detection (Colin C.) WED: Motion Processing Part 2 – The Aperture Problem (Colin C.)	Group Research Project Piloting & Debugging		Readings: Mather (2011) Ch. 12 Movshon et al (1985)
Week 6 25/03/2021 &	NO LECTURES THIS WEEK	NO TUTORIALS THIS WEEK		

27/03/2021				
Week 7 29/03/2021 & 31/03/2021	MON: Motion Processing Part 3 – from Single Neurons to Population Codes (Colin C.) WED: (Colin C.) Mapping Visual Cortex with fMRI (Colin C.)	Group Research Project Experiment Deployment & Data Collection	Revision quiz on Colin C.'s lecture material	Reading: Salzman et al (1990)
Week 8 05/04/2021 & 07/04/2021	MON: No lecture – Easter Monday WED: Resolving Perceptual Ambiguity (Colin C.)	Group Research Project Analysis & Interpretation		Readings: Treue (2001) Clifford (2009) Blake & Logothetis (2002)
Week 9 12/04/2021 & 14/04/2021	WED: Image formation & Image interpretation Part 1 (Colin P.) FRI: Image formation & Image interpretation Part 2 (Colin P.)	Group Research Project Poster Design & Preparation		Reading: Thompson et al. (2011) Ch. 9.
Week 10 19/04/2021 & 21/04/2021	WED: Vision in autism (Colin P.) FRI: Vision in schizophrenia (Colin P.)	Group Research Project Poster Presentations	Vision in Autism and Schizophrenia Quiz	Readings: Robertson & Baron-Cohen (2017) Butler et al (2008).
Study period: 24/04//2021 -29/04/2021				Exam preparation
Exam period: 30/04/2021- 13/05/2021				Exam preparation

5. Assessment

5.1 Assessment tasks

All assessments in this course have been designed and implemented in accordance with UNSW Assessment Policy.

Assessment task	Length	Weight	Mark	Due date
Assessment 1: Mid-session exam	30 MCQ + 3 short essay (1 hour)	20%	/100	Wed 17 Mar On-line
Assessment 2: Novel research project group presentation	2-hour poster session	15%	/100	Week 10 Tutorials
Assessment 3: Novel research project individual research report	2000 words	25%	/100	Thursday 29 April
Assessment 4: Final exam	6 short essay questions (2 hrs)	40%	/100	Exam period

Assessment 1: Mid-session exam will consist of 30 multiple-choice questions and three short essay questions. The exam will be based on material covered in the first 3 weeks of T1 (Weeks 1-3). Practice questions will be provided in weeks leading up to the exam. The exam will be held online on Wednesday 17 March, 10am- 6pm (Week 5), You will be able to start the exam any time during this period but the time limit to complete the exam itself will be 1hr. Marked exams scripts will be returned to students once marks are released in Week 6.

Assessments 2 & 3: As part of this course you will be required to design and conduct a small-scale empirical research project in the area of visual perception. After the completion of your project, you will be asked to make a poster summary of your research projects with a short oral presentation (10 minutes) on your project (worth 15%). All members of the research group are required to take part in these presentations, as you will be awarded a single mark for the poster and its presentation as a group. However, written research reports (individual mark worth 25%) on this project are expected to be individually written and submitted via Turnitin. The report should be formatted as a research report for the journal Psychological Science and should be approximately up to 2000 words in length. The teaching staff will be available to advise you during all stages of your project. Detailed instructions for this assignment will be released in Week 2. Final research report marks and feedback will be returned to students no later than Monday 10 May.

Assessment 4: The final exam will contain approximately 6 short essay questions. The exam will be based on the content covered after the mid-session exam (Weeks 4-10, inclusive). No student should organise travel during this period until the final examination schedule has been released and the date of the exam is known. Further details regarding the exact time and location of the exam will be released on myUNSW as they become available.

UNSW grading system: https://student.unsw.edu.au/grades

UNSW assessment policy: https://student.unsw.edu.au/assessment

5.2 Assessment criteria and standards

Where appropriate, further details and marking criteria for each assessment will be provided to students closer to the assessment release date (see 4.1: UNSW Assessment Design Procedure).

5.3 Submission of assessment tasks

Written Research Report (Novel Group Research Project): In accordance with UNSW Assessment Policy the essay must be submitted online via Turnitin. No paper or emailed copies will be accepted.

Late penalties: deduction of marks for late submissions will be in accordance with School policy (see: Psychology Student Guide).

Special Consideration: Students who are unable to complete an assessment task by the assigned due date can apply for special consideration. Students should also note that UNSW has a Fit to Sit/Submit rule for all assessments. If a student wishes to submit an application for special consideration for an exam or assessment, the application must be submitted prior to the start of the exam or before an assessment is submitted. If a student sits the exam/submits an assignment, they are declaring themselves well enough to do so and are unable to subsequently apply for special consideration. If a student becomes ill on the day of the exam, they must provide evidence dated within 24 hours of the exam, with their application.

Special consideration applications must be submitted to the online portal along with Third Party supporting documentation. Students who have experienced significant illness or misadventure during the assessment period may be eligible. Only circumstances deemed to be outside of the student's control are eligible for special consideration. Except in unusual circumstances, the duration of circumstances impacting academic work must be more than 3 consecutive days, or a total of 5 days within the teaching period. If the special consideration application is approved, students may be given an extended due date, or an alternative assessment/supplementary examination may be set. For more information see https://student.unsw.edu.au/special-consideration.

Alternative assessments: will be subject to approval and implemented in accordance with UNSW Assessment Implementation Procedure.

Supplementary examinations: will be made available for students with approved special consideration application and implemented in accordance with UNSW Assessment Policy.

5.4. Feedback on assessment

Feedback on all pieces of assessment in this course will be provided in accordance with UNSW Assessment Policy.

Assessment	When	Who	Where	How
Mid-session exam	Within 10 working days *after the exam*	Spehar	Online	Moodle
Novel Group Research Project- *online* presentation	Within 10 working days *after the presentation*	Clifford	Online	Moodle
Novel Group Research Project- written research report	10/05/2021	Clifford	Online	Turnitin
Final exam	N/A	N/A	N/A	N/A

6. Academic integrity, referencing and plagiarism

The APA (7th edition) referencing style is to be adopted in this course. Students should consult the publication manual itself (rather than third party interpretations of it) in order to properly adhere to APA style conventions. Students do not need to purchase a copy of the manual, it is available in the library or online. This resource is used by assessment markers and should be the only resource used by students to ensure they adopt this style appropriately:

APA 7th edition.

Referencing is a way of acknowledging the sources of information that you use to research your assignments. You need to provide a reference whenever you draw on someone else's words, ideas or research. Not referencing other people's work can constitute plagiarism.

Further information about referencing styles can be located at https://student.unsw.edu.au/referencing

Academic integrity is fundamental to success at university. Academic integrity can be defined as a commitment to six fundamental values in academic pursuits**:** honesty, trust, fairness, respect, responsibility and courage.[1] At UNSW, this means that your work must be your own, and others' ideas should be appropriately acknowledged. If you don't follow these rules, plagiarism may be detected in your work.

Further information about academic integrity and **plagiarism** can be located at:

- The *Current Students* site https://student.unsw.edu.au/plagiarism**,** and
- The *ELISE* training site http://subjectguides.library.unsw.edu.au/elise

The *Conduct and Integrity Unit* provides further resources to assist you to understand your conduct obligations as a student: https://student.unsw.edu.au/conduct.

7. Readings and resources

Textbook	Nil
Course information	Available on Moodle
Required readings	• Weekly readings as per section 4 are available for download via the UNSW Library holdings or the course Moodle page • School of Psychology Student Guide.
Recommended internet sites	UNSW Library UNSW Learning centre ELISE Turnitin Student Code of Conduct Policy concerning academic honesty Email policy UNSW Anti-racism policy UNSW Equity, Diversity and Inclusion policy

[1] International Center for Academic Integrity, 'The Fundamental Values of Academic Integrity', T. Fishman (ed), Clemson University, 2013.

8. Administrative matters

The School of Psychology Student Guide contains School policies and procedures relevant for all students enrolled in undergraduate or Masters psychology courses, such as:

- Attendance requirements
- Assignment submissions and returns
- Assessments
- Special consideration
- Student code of conduct
- Student complaints and grievances
- Equitable Learning Services
- Health and safety

It is expected that students familiarise themselves with the information contained in this guide.

9. Additional support for students

- The Current Students Gateway: https://student.unsw.edu.au/
- Academic Skills and Support: https://student.unsw.edu.au/academic-skills
- Student Wellbeing, Health and Safety: https://student.unsw.edu.au/wellbeing
- Equitable Learning Services: https://student.unsw.edu.au/els
- UNSW IT Service Centre: https://www.myit.unsw.edu.au/