



## Syllabus

### Subject

<b>Subject / Group</b>	11199 - Advanced research into cognitive psychology / 1
<b>Degree</b>	Master's in Human Cognition and Evolution
<b>Credits</b>	6
<b>Period</b>	2nd semester
<b>Language of instruction</b>	English

### Professors

Lecturers	Office hours for students					
	Starting time	Finishing time	Day	Start date	End date	Office / Building
Fabrice Parmentier - <a href="mailto:fabrice.parmentier@uib.es">fabrice.parmentier@uib.es</a>						You need to book a date with the professor in order to attend a tutoring session.

### Context

The module cover some key methodological tools available to today's cognitive psychologists and includes discussions of advanced topics illustrative of some important issues in modern cognitive psychology.

### Requirements

As the module covers some advanced topics, it is recommended that students should have some notions of research methodology and a basic knowledge of human cognition (especially attention and memory). Students without this background may struggle to complete the coursework.

### Recommended

A degree in psychology is strongly recommended. Students should have good notions of cognitive psychology and quantitative research methods.

### Skills

#### Specific

- \* Understanding of issues relating to the use of web-based technology for the scientific study of cognitive functions
- \* Learning and understanding specific advanced issues in the fields of human memory and attention, including transversal aspects such as development and the interaction between cognitive functions and other important aspects human psychology (such as emotions)



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### Generic

- \* Development of critical thinking, both with respect to methodological and theoretical issues. Ability to research a topic indendently.

### Basic

- \* You may consult the basic competencies students will have to achieve by the end of the Master's degree at the following address: [http://estudis.uib.cat/master/comp\\_basiques/](http://estudis.uib.cat/master/comp_basiques/)

## Content

Use of internet to carry out cognitive research, programming tools for cognitive psychologists, modules versus processes in human short-term memory, distraction by unexpected auditory stimuli, links between cognition and emotions, cognitive aging.

### Range of topics

#### Topic 1. Beyond the laboratory: Web-based experimentation

Presentation of some of the methodological tools available to today's cognitive psychologists and to discuss topics illustrative of some key issues in cognitive psychology. Description of some key technical considerations relating to the use of web-based methods to conduct web-based research, discussion of the pros and cons of such methodology.

#### Topic 2. Psychology software: Why cognitive psychologists should also be programmers

Presentation of various modern computer-based tools to conduct psychological experiments and discussion of their pros and cons.

#### Topic 3. Advanced topics in human memory

Critical evaluation of established modular models of memory, presentation of a number of key emprirical results, critical discussion of the distinction between short-term and long-term memory, rols of transitional probabilities, interaction between memory and language, critical discussion of the nature and underlying principles of human short-term memory (especially with respect to serial memory).

#### Topic 4. Attention capture by unexpected events

Discussion of the equilibrium between selective attention and the involuntary detection of change, covering the electrophysiological and behavioral aspects of distraction by unexpected stimuli, based on empirical finidngs and covering the latest theoretical knowledge in the field.

#### Topic 5. Aging and cognition

Covering the development of cognitive functions from birth to old age, based on empirical findings using different methodologies, key general factors mediating the development change in cognitive functions, accounts of cognitive decline in old age.

## Teaching methodology

The module includes lectures, directed reading, individual study time, presentations by students and written coursework.

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### Workload

The volume of work includes lectures, seminars, individual presentations, directed readings and written coursework.

### In-class work activities (1.2 credits, 30 hours)

Modality	Name	Typ. Grp.	Description	Hours
Theory classes	Lectures on methodological and theoretical issues	Large group (G)	Standard lectures covering the aforementioned topics. The presentations used for each lecture will be made available to student prior to each lecture.	20
Seminars and workshops	Discussion seminars	Medium group (M)	Seminars will be held with the lecturers in order to promote the active participation of students in discussions relating to the topics covered.	10

At the beginning of the semester a schedule of the subject will be made available to students through the UIBdigital platform. The schedule shall at least include the dates when the continuing assessment tests will be conducted and the hand-in dates for the assignments. In addition, the lecturer shall inform students as to whether the subject work plan will be carried out through the schedule or through another way included in the Aula Digital platform.

### Distance education tasks (4.8 credits, 120 hours)

Modality	Name	Description	Hours
Individual self-study	Oral presentations	Students will perform individual presentations on a topic of their choice relating to the general themes of the module.	30
Individual self-study	Written coursework	Students will write up an individual essay on a topic of their choice relating to the general themes of the module, based on their personal and critical reading of scientific work.	90

### Specific risks and protective measures

The learning activities of this course do not entail specific health or safety risks for the students and therefore no special protective measures are needed.

### Student learning assessment

The module is assessed through coursework (one oral presentation and one essay).

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### Frau en elements d'avaluació

In accordance with article 33 of Regulation of academic studies, "regardless of the disciplinary procedure that may be followed against the offending student, the demonstrably fraudulent performance of any of the evaluation elements included in the teaching guides of the subjects will lead, at the discretion of the teacher, a undervaluation in the qualification that may involve the qualification of "suspense 0" in the annual evaluation of the subject".

### Oral presentations

Modality	Individual self-study
Technique	Oral tests ( <b>non-retrievable</b> )
Description	Students will perform individual presentations on a topic of their choice relating to the general themes of the module.
Assessment criteria	Students must make an individual presentation on a topic of their choice within the area of psychology. The presentation should introduce the topic and describe current theories, supporting data (from different perspectives: for example, behavioural, brain imaging, brain stimulation) and outstanding questions. The presentation can be used to prepare for the essay (see below). Presentations should be prepared in Powerpoint and last 10-15 minutes. Presentations will be followed by questions and answers.

Final grade percentage: 50%

### Written coursework

Modality	Individual self-study
Technique	Papers and projects ( <b>non-retrievable</b> )
Description	Students will write up an individual essay on a topic of their choice relating to the general themes of the module, based on their personal and critical reading of scientific work.
Assessment criteria	Students must submit a short literature review on a topic of their choice within the area of cognitive psychology. The essay should include a critical assessment of some published scientific studies (selected from established international journals) and cover findings based on more than one method (e.g., behavioural data, brain imaging, brain stimulation). The essay should highlight the importance of the topics, explain what the major theories are, give examples of supporting findings, discuss possible contradictions or discrepancies among studies, outline some issues that future research should focus on. Maximum word limit: 3,500 words including references.

Final grade percentage: 50%

## Resources, bibliography and additional documentation

Lectures will be supported by essential and recommended readings.

### Basic bibliography

All recommended readings will be available from Campus Extens.

Baddeley, A. D. (2002). Is working memory still working? *European Psychologist*, 7(2), 85-97.

Birnbaum, M. H. (2004). Human research and data collection via the internet. *Annual Review of Psychology*, 55, 803-832.

Eysenck, W. W., & Keane, M. T. (2000). *Cognitive Psychology. A student's handbook* (4th Ed.). Hove, England: Psychology Press. [Guillem Cifre: 153EYS]

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- Parmentier, F. B. R. (2014). The cognitive determinants of behavioral distraction by deviant auditory stimuli: A review. *Psychological Research*, 78(3), 321-338.
- Reips, U. D. (2002). Standards for Internet-based experimenting. *Experimental Psychology*, 49, 243-256.
- Salthouse, T. A. (1996). The processing speed theory of adult age differences in cognition. *Psychological Review*, 103, 403-428.
- Shimamura, A. P. (1994). Neuropsychological perspectives on memory and cognitive decline in normal human aging. *Seminars in the Neurosciences*, 6, 387-394.
- West, R. (2004). The Effects of Aging on Controlled Attention and Conflict Processing in the Stroop Task. *Journal of Cognitive Neuroscience*, 16, 103-113.

### Complementary bibliography

- Andrés, P., Guerrini, C., Phillips, L. H., Perfect, T. J. (2008). Differential effects of aging on executive and automatic inhibition. *Developmental Neuropsychology*, 33(2), 101-123.
- Baltes, P. B., & Linderberger, U. (1997). Emergence of a powerful connection between sensory and cognitive functions across the adult life span: a new window to the study of cognitive aging? *Psychology and Aging*, 12(1), 12-21.
- Botvinick, M., & Bylisma, L. M. (2005). Regularization in short-term memory for serial order. *Journal of Experimental Psychology: Learning, memory, and Cognition*, 31(2), 351-358.
- Brockmole, J. R., & Logie, R. H. (2013). Age-related change in visual working memory: a study of 55,753 participants aged 8–75. *Frontiers in Psychology*, 4: 12.
- Cheour, M., Martynova, O., Näätänen, R., Erkkola, R., Sillanpää, M., Kero, P., Raz, A., Kaipio, M. L., Hiltunen, J., Aaltonen, O., Savela, J., & Hämäläinen, H. (2002). Speech sounds learned by sleeping newborns. *Nature*, 415, 599-600.
- Escera, C., Alho, K., Winkler, I. & Näätänen, R. (1998). Neural mechanisms of involuntary attention to acoustic novelty and change. *Journal of Cognitive Neuroscience*, 10, 590-604.
- Gathercole, S. E., Pickering, S. J., Hall, M., Peaker, S. M. (2001). Dissociable lexical and phonological influences on serial recognition and serial recall. *The Quarterly Journal of Experimental Psychology*, 54(1), 1-30.
- Hewson, C. M., Laurent, D., & Vogel, C. M. (1996). Proper methodologies for psychological and sociological studies conducted via the Internet. *Behaviour, Research Methods, Instruments and Computers*, 28, 186-191.
- Hulme, C., Thomson, N., Muir, C., & Lawrence, A. (1984). Speech rate and the development of short-term memory span. *Journal of Memory & Language*, 30, 685-701.
- Jones, D. M., Farrand, P., Stuart, G., & Morris, N. (1995). Functional equivalence of verbal and spatial information in serial short-term memory. *Journal of Experimental Psychology: Learning, memory, and Cognition*, 21(4), 1008-1018.
- Jones, D. M., Madden, C., & Miles, C. (2007). Privileged access by irrelevant speech to short-term memory: The role of changing state. *The Quarterly Journal of Experimental Psychology*, 44(4), 645-669.
- Naveh-Benjamin, M. (2000). Adult-age differences in memory performance: Tests of an associative deficit hypothesis. *Journal of Experimental Psychology: Learning, Memory and Cognition*, 26, 1170-1187.
- Naveh-Benjamin, M., Guez, J., Kilb, A., & Reedy, S. (2004). The associative deficit of older adults: Further support using face-name associations. *Psychology and Aging*, 19, 541-546.
- Notebaert, W., Houtman, F., Van Opstal, F., Gevers, W., Fias, W., & Verguts, T. (2009). Post-error slowing: An orienting account. *Cognition*, 111, 275-279.
- Pacheco-Unguetti, A. P., & Parmentier, F. B. R. (2014). Sadness increases distraction by auditory deviant stimuli. *Emotion*, 14, 203-213.
- Parkin, A. J. (1999). *Memory*. Hove, England: Psychology Press.
- Parmentier, F. B. R. (2011). Exploring the determinants of memory for spatial sequences. In A. Vandierendonck & A. Smaleck (Eds.), *Spatial working memory*. Hove, UK: Psychology Press.
- Parmentier, F. B. R., & Hebrero, M. (2013). Cognitive control of involuntary distraction by deviant sound. *Journal of Experimental Psychology: Learning, Memory & Cognition*, 39, 1635-1641.



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- Parmentier, F. B. R., Elford, G., Escera, C., Andrés, P., & San Miguel, I. (2008). The cognitive locus of distraction by acoustic novelty in the cross-modal oddball task. *Cognition*, 106, 408-432.
- Schröger, E. (1996). A neural mechanism for involuntary attention shifts to changes in auditory stimulation. *Journal of Cognitive Neuroscience*, 8, 527-539.
- Shtyrov, Y., Hauk, O., & Pulvermüller, F. (2004). Distributed neuronal networks for encoding category-specific semantic information: the mismatch negativity to action words. *European Journal of Neuroscience*, 19, 1083–1092.
- Smith, M. A., & Leigh, B. (1997). Virtual subjects: Using the Internet as an alternative source of subjects and research environment. *Behaviour, Research Methods, Instruments and Computers*, 29, 496-505
- Wetzel, N., & Schröger, E. (2007a). Cognitive control of involuntary attention and distraction in children and adolescents. *Brain Research*, 1155, 134-146.

