
Ano Letivo 2021-22

Unidade Curricular NEUROCIÊNCIAS COGNITIVAS

Cursos NEUROCIÊNCIAS COGNITIVAS E NEUROPSICOLOGIA (2.º ciclo)
ESPECIALIZAÇÃO DE NEUROPSICOLOGIA

Unidade Orgânica Faculdade de Ciências Humanas e Sociais

Código da Unidade Curricular 15261023

Área Científica PSICOLOGIA

Sigla

Código CNAEF (3 dígitos) 311

Contributo para os Objetivos de
Desenvolvimento Sustentável - 3, 4
ODS (Indicar até 3 objetivos)

Línguas de Aprendizagem English

Modalidade de ensino

Teóricas e teóricas-práticas

Docente Responsável

Ana Belén García Gámez

DOCENTE	TIPO DE AULA	TURMAS	TOTAL HORAS DE CONTACTO (*)
Ana Belén García Gámez	OT; T; TP	T1; TP1; OT1	19.5T; 19.5TP; 5OT

* Para turmas lecionadas conjuntamente, apenas é contabilizada a carga horária de uma delas.

ANO	PERÍODO DE FUNCIONAMENTO*	HORAS DE CONTACTO	HORAS TOTAIS DE TRABALHO	ECTS
1º	S1	19.833333333333T; 19.833333333333TP; 5OT	140	5

* A-Anual;S-Semestral;Q-Quadrimestral;T-Trimestral

Precedências

Sem precedências

Conhecimentos Prévios recomendados

Conhecimento em Psicologia Cognitiva / Biológica / Neurobiológica no nível BSc é útil. Além disso, o conhecimento elementar em Neurociência e Biologia / Química / Física é útil.

Objetivos de aprendizagem (conhecimentos, aptidões e competências)

Nesta unidade curricular apresentam-se diferentes conceitos e modelos necessários à compreensão das bases biológicas dos processos cognitivos, comportamentais e emocionais. Será dado destaque aos resultados obtidos com metodologias e técnicas actuais, que permitem investigar as bases neuronais de processos cognitivos como a memória, linguagem, atenção e processos emocionais entre outros. Ao concluir a unidade curricular, o estudante deverá mostrar as seguintes competências: a) saber caracterizar a organização de diferentes processos cognitivos e emocionais; b) saber relacionar os diferentes aspectos da cognição e do comportamento com as suas bases biológicas; c) saber quais os tópicos actuais de investigação em Neurociências Cognitivas; d) conhecer as principais metodologias de investigação em Neurociências Cognitivas; e) discutir tópicos actuais neste domínio científico.

Conteúdos programáticos

I Introduction to Cognitive Neuroscience (Chapters 1, 2 in Gazzaniga; Chapter 1 in Liqun Luo; Chapter 1 in Bryan Kolb & Ian Wishaw)

II Neuroanatomy (Chapters 1,2,3,4 in Gazzaniga; Chapter 2,3 in Liqun Luo).

III Basic Neurobiology & Neurophysiology (Chapter 2 in Gazzaniga; Chapter 1 in Liqun Luo)

IV Ascending pathways of perception (Chapters 4, 5, 6 in Gazzaniga; Chapter 8 in Bryan Kolb & Ian Wishaw; Chapters 5,6 in Liqun Luo).

V Descending pathways and motor control (Chapters 6, 7, 8 in Gazzaniga; Chapter 9 in Bryan Kolb & Ian Wishaw)

VI Attention (Chapter 7 in Gazzaniga; Chapter 22 in Bryan Kolb & Ian Wishaw)

VII Perceptual mechanisms (Chapter 6 in Gazzaniga)

VIII Emotion (Chapter 10 in Gazzaniga; Bryan Kolb & Ian Wishaw, chapter 20)

IX Memory (Chapter 9 in Gazzaniga; Chapter 4 in Bryan Kolb & Ian Wishaw)

X Language (Chapter 10 in Gazzaniga; Chapter 4 in Bryan Kolb & Ian Wishaw)

XI Cognitive Control (Chapter 13 in Gazzaniga)

Metodologias de ensino (avaliação incluída)

Avaliação contínua e exame final: Os alunos serão avaliados por dois exames ao longo do curso. Para ser aprovado no curso, o aluno terá uma pontuação média de no mínimo 10 (máx. 20). Caso o aluno não atinja média mínima de 10 valores, o aluno terá a oportunidade de ser aprovado no curso por meio de exame final. Além disso, a avaliação contínua decorrerá com a realização de e- atividades semanalmente, o que também será uma parte muito importante da nota final.

* Os alunos poderão obter 1 ponto extra participando de estudos experimentais (esta pontuação pode variar ou mudar dependendo das circunstâncias de ensino).

Bibliografia principal

- Baddeley, A. (2003). Working memory: Looking back and looking forward. *Nat Rev Neuroscience*, 4, 829-839.
- Botvinick, M. M. (2008). Hierarchical models of behavior and prefrontal function. *Trends in Cog Sciences*, 12, 201-208.
- Gazzaniga, M. S., Ivry, R. B., Mangun, G. R., Steven, M. S. (2009). *Cognitive Neuroscience: The Biology of Mind*, 3rd Edition.
- Hagoort, P., & Van Berkum, J. A. (2007). Beyond the sentence given. *Philosophical Transactions of the Royal Society B*, 362, 801-811.
- Koch, C., & Laurent, G. (1999). Complexity and the nervous system. *Science*, 284, 96-98.
- Kolb, B., & Whishaw, I. Q. (2015). *Fundamentals of human neuropsychology*. Macmillan.
- Luo, L. (2016). *Principles of neurobiology*. Garland Science.
- MacSweeney, M., Capek, C. M., Campbell, R., & Woll, B. (2008). The signing brain: the neurobiology of sign language. *Trends in Cog Sciences*, 12, 432-440.
- Stoet, G., & Snyder, L. H. (2009). Neural correlates of executive control functions in the monkey. *Trends in Cog Sciences*, 13, 228-234.

Academic Year 2021-22

Course unit COGNITIVE NEUROSCIENCE

Courses COGNITIVE NEUROSCIENCE AND NEUROPSYCHOLOGY
SPECIALIZATION IN NEUROPSYCHOLOGY

Faculty / School FACULTY OF HUMAN AND SOCIAL SCIENCES

Main Scientific Area

Acronym

CNAEF code (3 digits) 311

Contribution to Sustainable Development Goals - SGD 3, 4
(Designate up to 3 objectives)

Language of instruction English

Teaching/Learning modality Lectures and theoretical-practical classes

Coordinating teacher Ana Belén García Gámez

Teaching staff	Type	Classes	Hours (*)
Ana Belén García Gámez	OT; T; TP	T1; TP1; OT1	19.5T; 19.5TP; 5OT

* For classes taught jointly, it is only accounted the workload of one.

Contact hours	T	TP	PL	TC	S	E	OT	O	Total
	19.833333333333	19.833333333333	0	0	0	0	5	0	140

T - Theoretical; TP - Theoretical and practical ; PL - Practical and laboratorial; TC - Field Work; S - Seminar; E - Training; OT - Tutorial; O - Other

Pre-requisites

no pre-requisites

Prior knowledge and skills

Knowledge in Cognitive/Biological/Neurobiological Psychology at the BSc level is helpful. In addition, elementary knowledge in Neuroscience and Biology/Chemistry/Physics is useful.

The students intended learning outcomes (knowledge, skills and competences)

This course presents concepts and models, based on neurobiology and information processing, needed to understand the neurobiological basis of cognition, emotion and behavior. Emphasis will be given to results obtained with current methodologies and techniques, including neuroimaging methods, which allow to investigate the neural basis of cognitive processes such as memory, language, attention and emotional processes. After completing the course, students must show the following skills: a) characterize the organization of different cognitive and emotional processes; b) know how to relate the different aspects of cognition and behavior to their biological basis; c) be acquainted with current research topics in Cognitive Neuroscience; d) identify the principal research methodologies in Cognitive Neuroscience; and e) know how to discuss current topics in this scientific field.

Syllabus

- I Introduction to Cognitive Neuroscience** (Chapters 1, 2 in Gazzaniga; Chapter 1 in Liqun Luo; Chapter 1 in Bryan Kolb & Ian Wishaw)
- II Neuroanatomy** (Chapters 1,2,3,4 in Gazzaniga; Chapter 2,3 in Liqun Luo).
- III Basic Neurobiology & Neurophysiology** (Chapter 2 in Gazzaniga; Chapter 1 in Liqun Luo)
- IV Ascending pathways of perception** (Chapters 4, 5, 6 in Gazzaniga; Chapter 8 in Bryan Kolb & Ian Wishaw; Chapters 5,6 in Liqun Luo).
- V Descending pathways and motor control** (Chapters 6, 7, 8 in Gazzaniga; Chapter 9 in Bryan Kolb & Ian Wishaw)
- VI Attention** (Chapter 7 in Gazzaniga; Chapter 22 in Bryan Kolb & Ian Wishaw)
- VII Perceptual mechanisms** (Chapter 6 in Gazzaniga)
- VIII Emotion** (Chapter 10 in Gazzaniga; Bryan Kolb & Ian Wishaw, chapter 20)
- IX Memory** (Chapter 9 in Gazzaniga; Chapter 4 in Bryan Kolb & Ian Wishaw)
- X Language** (Chapter 10 in Gazzaniga; Chapter 4 in Bryan Kolb & Ian Wishaw)
- XI Cognitive Control** (Chapter 13 in Gazzaniga)

Teaching methodologies (including evaluation)

Continuous assessment and final exam: Students will be assessed by two exams throughout the course. To pass the course, the student will have an average score of at least 10 (max. 20). If the student does not reach a minimum average of 10 points, the student will have the opportunity to pass the course by means of a final exam. In addition, the continuous assessment will take place with the completion of weekly e-activities, which will also be a very important part of the final grade.

*Students may earn 1 extra point by participating in experimental studies (this score may vary or change depending on teaching circumstances).

Main Bibliography

- Baddeley, A. (2003). Working memory: Looking back and looking forward. *Nat Rev Neuroscience*, 4, 829-839.
- Botvinick, M. M. (2008). Hierarchical models of behavior and prefrontal function. *Trends in Cog Sciences*, 12, 201-208.
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