

STUDY GUIDE

BEHAVIOURAL NEUROSCIENCE

Degree in Psychology
C.U. Cardenal Cisneros
University of Alcalá

Academic year 2026/27

1st Year – 2nd Term

STUDY GUIDE

Name of the subject:	Behavioural Neuroscience
Code:	562006
Studies:	Degree in Psychology
Department and Area of knowledge:	Psychology (Biological Foundations of Behaviour)
Character:	Basic training
ECTS credits:	6
Year and Term:	1st Year, 2nd Term
Lecturer:	Enrique Fraga Sierra Ana Sofía Urraca
Office hours:	Appointment request by e-mail. Tuesdays, 12:00-1:00p.m.
Office number:	2 (Enrique) 35 (Ana Sofía)
E-mail:	Internal e-mail of Blackboard virtual platform
Language:	Spanish

1. INTRODUCTION

SUBJECT DESCRIPTION

This subject is part of the module *Biological Basis of Behaviour* and is a continuation of the subject *Foundations of Psychobiology* (first year, first term) and is the foundation of *Physiological Psychology* (second year, first term) and *Psychopharmacology* (third year).

The main aim of this subject is for the student to have a global vision of the neural bases of human behavior, and to understand the way in which the nervous system is related to the main psychological processes of cognitive activity (information processing) and behaviour. Thus, it studies neuroanatomical and physiological substrates of human behaviour, observing the close relationship between its biological, cognitive and social dimensions.

It begins with a review of microscopic and macroscopic anatomy of the nervous system and of the neuroendocrine system, followed by anatomical and functional bases of sensory systems (vision, audition, tact, chemical senses) and of the motor system. Finally, the neural bases of high-level psychological functions (e.g., language and memory) are studied.

It is noteworthy that an innovative methodology will be used in this subject, namely *dialogic literary circles*, as well as the Psychology Lab.

Finally, the teachers of this module wish to assist and welcome foreign students. The aim of this programme is to assist foreign students adequately. To this aim, the following resources and possibilities are available:

- There is a version in English of this study guide.
- The foreign student will be provided with a selection of references of books and journal articles that include the contents of the subject.
- A model of the exam in English will be provided.
- Prof. Ana Sofía Urraca will be available for personal attention and communication in English.

Moreover, for foreign students and for ordinary students who requested it at the moment of enrolment, **practical and seminar sessions will be developed in English.**

When completing any academic assignment, it is important to consult with the faculty regarding the permitted use of artificial intelligence (AI) tools. If this is not expressly stated on the guide or instructions for that particular activity, it is understood that AI should not be used under any circumstances. We remind you that the improper use of these technologies, such as generating assignments without express authorization, may constitute academic fraud. Therefore, it is recommended that you review the university's regulations regarding the use of AI, always act responsibly and transparently in the learning process, and consult with the faculty any questions you may have.

Prerequisites and recommendations

A minimum B2 level of Spanish is recommended, as well as some basic knowledge about anatomy of the nervous system.

2. COMPETENCES

According to the regulations of the learning assessments of the University of Alcalá, approved in ordinary session of the Board of Directors on 24 March 2011 and modified on ordinary session of the Board of Directors of 22nd July 2021, the competences include the knowledge, skills and attitudes that will enable a graduate to confront with confidence the resolution of problems or the intervention in an issue in a given academic, professional or social context.

Specifically, the competences that the student will have to develop in this subject are described below.

Generic competences:

GC1. To acquire the knowledge and understand the principles of Psychology as a scientific discipline, including theory, methods and application fields, with the support of advanced textbooks and documentation incorporating cutting-edge knowledge in this field of study.

GC3. To be able to collect and interpret relevant data on human behaviour, at both individual and social levels and in different contexts, to express reasoned opinions of social, scientific or ethical nature in the psychological field.

GC4. To be able to convey information, ideas, problems and solutions about human behaviour to both general, and specialised, audiences.

Specific competences:

SC1. To know and understand the functioning, characteristics, contributions and limitations of different theoretical models in Psychology.

SC2. To know and understand the basic laws and principles of the different psychological processes.

SC3. To know and understand the processes and main stages of psychological development throughout the life cycle in their aspects of normality and abnormality.

SC4. To know and understand the biological foundations of human behaviour and psychological functions.

Transversal competences:

TC1. To be able to express oneself correctly in Spanish in the professional field.

TC2. To be able to manage information and knowledge in the professional field, including the use of information and communication basic technological tools.

TC3. To understand and express oneself in a foreign language in his/her own disciplinary field, particularly in English.

TC4. To consider ethics and intellectual integrity as essential values of professional practice.

TC6. To have the capacity for teamwork.

3. CONTENTS

The contents of the subject, which will allow students to work on the already mentioned competences, are described on the following chart.

Nº TEMA	NOMBRE DEL TEMA	HORAS		
		TEORÍA	PRÁCTICA	SEMINARIO
1	Conceptual Approach to Neuroscience Methods and research techniques in Psychobiology and Neuroscience. Major neuroscientists in history and their contributions.		4	
2	Anatomophysiological Foundations of the Nervous System Anatomophysiology of the neuron. Resting potential and its ionic bases. Action potential and its propagation. Interneuronal communication: synapses, excitatory and inhibitory postsynaptic potentials. Neural integration. Neurotransmitters.	7	4	
3	Functional Anatomy of the Central Nervous System Axes and planes of reference. Central and peripheral nervous systems. White matter and gray matter; types of neurons in different regions of the nervous system. Spinal cord. Cerebellum. Brainstem (midbrain, pons, medulla oblongata). Diencephalon (hypothalamus, thalamus). Forebrain / cerebral hemispheres: cortex, basal ganglia, limbic system.	7	4	
4	Sensory Systems Introduction to the physiology of the senses. Sensory receptors: photoreceptors, mechanoreceptors, chemoreceptors. Sensory transduction. Transmission of information to the central nervous system.	8	3	3

	Sensory cranial and spinal nerves. The role of the thalamus. Cortical processing of sensory information. Processing circuits and pathways. Peripheral and cortical lesions.			
5	Effector Systems Types of effectors. Motor systems. Motor neurons. Sensory receptors of the muscles. Proprioception. Spinal reflexes. Descending motor systems: from the cerebral cortex, from the brainstem. Motor cranial and spinal nerves. Modulatory motor systems: cerebellum and basal ganglia. Lesions and diseases of the motor system.	4		
6	Autonomic Regulation: The Neuroendocrine System and the Autonomic Nervous System Comparison between the nervous and endocrine systems. Autonomic nervous system, sympathetic and parasympathetic divisions. Endocrine glands and their hormones. Hypothalamic–pituitary axis.	4		
TOTAL		30	15	3
		48		

4. TEACHING-LEARNING METHODOLOGY. FORMATIVE ACTIVITIES.

4.1. Credit distribution (To specify in hours)

This subject consists of 50 hours of in-person classes (1/3 of the ETCS credits assigned, 100% of class attendance) and 100 hours of independent learning (2/3 of ETCS credits assigned, 0% of class attendance).

Total number of hours (6 ECTS): 150	
Number of hours of classroom attendance 50:	30 hours of whole-group lessons 15 hours of practical lessons 3 hours of seminars 2 hours of assessment tasks
Number of hours of independent learning 100:	100 hours

4.2. Methodological strategies, materials and resources

Teaching-learning methodology:

Teaching–Learning Methods:

A. In-person classes, accounting for 1/3 of the ECTS credits, will be distributed throughout the semester in three organizational formats: lectures, practical sessions, and seminars.

- **Lectures.** Part of the theoretical content will be provided and/or delivered by the instructor, while other parts will be searched for or prepared by the students. When required by the instructor, students must have read the topic prior to the session, and its content will be discussed or clarified during class.
- **Practical sessions.** Individual and/or group practical activities guided by the instructors will be carried out. These will include case studies, practical problem-solving, analysis and discussion of documentary and/or audiovisual information (articles, videos, scientific documentaries), and presentation of assignments. Additionally, during practical sessions, guidelines will be provided to direct and guide students' individual and group autonomous work. A draft of the practical program for the course, which may be subject to change, is as follows:
 - **P1:** research, analysis, and oral presentation on various neuroscientists throughout history, such as, for example: Santiago Ramón y Cajal, Pierre Broca, Karl Wernicke, Alois Alzheimer, Rita Levi-Montalcini, Donald Hebb, Giacomo Rizzolatti, Antonio Damasio, Sebastian Seung.
 - **P2:** construction of a neuron model using modeling clay and other materials, representing a specific phase of nerve impulse transmission, and subsequent presentation of the work to classmates.
 - **P3:** assembly of a 30-piece model of the brain and spinal cord, along with related activities, using neuroanatomy charts to consolidate knowledge of certain regions or structures and their functions.
 - **P4:** to be conducted in the Psychology laboratory, involving the analysis and dissection of organic samples (sheep heads and brains).
 - **P5:** analysis of clinical cases of patients with diverse symptomatology resulting from brain injury.
- **Seminars.** Through dialogic discussion methodologies and case-study approaches, clinical cases of patients with sensory and/or motor impairments (e.g., visual agnosia) resulting from acquired brain injury will be analyzed.

IMPORTANT: As indicated in the presentation section, for the group of students who, at the time of enrollment, choose to follow the English-taught track, the practical sessions and seminars of the course will be conducted in this language. In this way, we aim to contribute to the development of one of the transversal competencies of the Psychology degree (CT3): "to understand and express oneself in a foreign language within the disciplinary field, particularly English."

B. Autonomous work accounts for 2/3 of the ECTS credits for the course. It includes tasks such as:

- Reading materials and/or watching videos prior to their analysis in face-to-face sessions.
- Reading articles or book chapters as a complement to class materials or for the autonomous preparation of specific sections of the syllabus.
- Completing activities initiated during practical sessions or seminars.
- Preparing assignments for submission or presentation in class.
- Personal study and exam preparation.

To succeed in the course, it is essential that students genuinely dedicate this time to working on the subject.

Materials and Resources:

The resources used in this course will be varied and aligned with the different methodologies, formats, and settings in which the course will take place:

- **Material resources:**
 - Students will be provided with basic materials for studying the different topics of the syllabus, including written materials (slides, scientific journal articles, textbook chapters) and audiovisual materials (short instructional videos explaining specific processes; documentaries on clinical cases, etc.).
 - Students who require them may request loaned computers for taking notes in class, searching for information for assignments, etc.
 - At the CUCC Learning and Research Resource Center (CRAI), students may access specialized textbooks for the course, the references of which are listed in this syllabus guide.
- **Technological resources:** the institutional virtual classroom used at CUCC is the Blackboard platform, with multiple functionalities that allow access to content and materials, submission of assignments, access to grades and feedback, etc.
- **Environmental resources:** students have access to the CUCC Library (CRAI), which offers individual study spaces and group work rooms.

5. ASSESSMENT: assessment criteria, report criteria and assessment procedures

The regulation of the learning assessments of the University of Alcalá, approved in ordinary session of the Board of Directors on 24 March 2011 and modified in ordinary session of the Board of Directors on 5 May 2016, sets the following elements:

- Learning outcomes: are verifiable statements of what a student should know, understand and be able to do after obtaining a specific mark, or after finishing a program or its components.
- Assessment criteria: are the criteria that specify the dimensions and issues that will be assessed in learning.
- Report criteria: distribution of the marks according to the weighting of the assessment criteria, proficiency level or expected outcomes.

The above-mentioned elements for this subject are listed below.

Learning outcomes

The learning outcomes for the subject of Biological Bases of Behaviour set out in the Verification Report of the Degree in Psychology, and relevant to the present subject, are indicated in the following table. It also shows the specific competences to verify each learning outcome.

Specific competence	Related learning outcomes
SC1. To know and understand the functioning, characteristics, contributions and limitations of different theoretical models in Psychology.	- The student understands the concept of Psychobiology and knows the different factors that contribute to the explanation of human behaviour. - The student knows the methods and techniques that Psychobiology uses to study behaviour.
SC2. To know and understand the basic laws and principles of the different psychological processes.	The student understands and explains human behaviour by integrating different perspectives.
SC3. To know and understand the main processes and stages of psychological development throughout the life cycle, in both their normal and abnormal aspects.	The student understands human behaviour, its development, and the possibilities for compensation offered by the nervous system thanks to neuroplasticity throughout the life cycle, from the perspective of Developmental Psychobiology.
SC4. To know and understand the biological foundations of human behaviour and psychological functions.	- The student understands the biological bases of behaviour and the intervention of nervous and endocrine systems in the main psychological processes. - The student knows the organization of the basic components and structures of the nervous system, as well as their interaction with other systems. - The student understands human behaviour, its development and the compensation possibilities offered by the nervous system thanks to neuroplasticity, present throughout the life cycle, from the perspective of the Psychology of Development. - The student knows the biological bases of the different psychological disorders.

In addition, the appropriate development of **transversal competences** would imply the achievement of the following learning outcomes, which will be assessed transversally by the different assessment instruments mentioned in the table of the section "Report criteria" (namely: theoretical activities, practical classes, seminars and exam).

Transversal competence	Related learning outcomes
To be able to express oneself correctly in Spanish in the professional field.	The student produces oral presentations and written reports using formal style.
To be able to manage information and knowledge in the professional field, including the use of basic information and communication technological tools	The student searches for and uses documentary sources relevant for the discipline. The student analyses and interprets research and publications on the subject. The student argues in terms of scientific thinking, and relates theory and evidence within research in the field of health sciences.
To understand and express oneself in a foreign language in his/her own disciplinary field, particularly in English.	The student is able to understand and analyse texts on the subject in English and use them for his/her works.
To have the capacity for teamwork.	The student cooperates with others and contributes to a common project goal. He/she assumes individual responsibility in group work.

Assessment criteria:

The following assessment criteria are indicators of the Learning Outcomes and will be used to assess the degree of competence development related to this subject:

Ev. Cr. 1: Investigates, analyses, synthesises, and demonstrates an adequate understanding of the contributions of the neuroscientists addressed in the course and the research techniques used by them, as well as their impact on the delineation of the field of Neuroscience from its origins to its current status.

Ev. Cr. 2: Demonstrates an understanding of the physiological process underlying the generation and transmission of the nerve impulse at both the intraneuronal and intercellular

levels, and identifies, within this context, the function of the basic components and organelles of the different types of neurons.

Ev. Cr. 3: Identifies, spatially locates at a macroscopic level, and associates with their respective psychobiological functions the basic components and structures of the nervous and neuroendocrine systems, both in images and in three-dimensional models.

Ev. Cr. 4: Identifies and locates the neuroanatomical structures and circuits involved in sensory and motor systems and demonstrates an understanding of their complex mechanisms of functioning.

Ev. Cr. 5: Analyzes in depth the key elements related to the possible alterations that may affect the different sensory systems and the motor system, as well as the manifestations of neuroplasticity in the human nervous system.

Report criteria:

The following tables explain the assessment criteria with their respective weights and the instruments to be used in the assessment of the subject, for the continuous and final modalities for both ordinary and extraordinary periods.

Continuous assessment. Ordinary and extraordinary assessment periods:

Criterios de evaluación	Herramientas de evaluación				
	Examen	Prácticas	Seminarios	Actividades teóricas	%
Assmt. Cr. 1: Investigates, analyses, synthesises, and demonstrates an adequate understanding of the contributions of the neuroscientists addressed in the course and the research techniques used by them, as well as their impact on the delineation of the field of Neuroscience from its origins to its current status.	5%	5%			10%
Assmt. Cr. 2: Demonstrates an understanding of the physiological process underlying the generation and transmission of the nerve impulse at both the intraneuronal and intercellular levels, and identifies, within this context, the function of the basic components and organelles of the different types of neurons.	10%	5%		10%	25%
Assmt. Cr. 3: Identifies, spatially locates at a macroscopic level, and associates with their respective psychobiological functions the basic components and structures of the nervous and neuroendocrine systems, both in images and in three-dimensional models.	10%	10%		10%	30%
Assmt. Cr. 4: Identifies and locates the neuroanatomical structures and circuits involved in sensory and motor systems and demonstrates an understanding of their complex mechanisms of functioning.	10%	5%		5%	20%
Assmt. Cr. 5: Analyzes in depth the key elements related to the possible alterations that may affect the different sensory systems and the motor system, as well as the manifestations of	5%		10%		15%

neuroplasticity in the human nervous system.					
TOTAL	40%	25%	10%	25%	100%

Final assessment. Ordinary assessment period (if requested by the student at the beginning of the term) and extraordinary (if the student fails the continuous assessment modality)

Assessment criteria	Herramientas de evaluación	Examen	Prueba práctica	%
Assmt. Cr. 1: Investigates, analyses, synthesises, and demonstrates an adequate understanding of the contributions of the neuroscientists addressed in the course and the research techniques used by them, as well as their impact on the delineation of the field of Neuroscience from its origins to its current status.		10%		10%
Assmt. Cr. 2: Demonstrates an understanding of the physiological process underlying the generation and transmission of the nerve impulse at both the intraneuronal and intercellular levels, and identifies, within this context, the function of the basic components and organelles of the different types of neurons.		25%		25%
Assmt. Cr. 3: Identifies, spatially locates at a macroscopic level, and associates with their respective psychobiological functions the basic components and structures of the nervous and neuroendocrine systems, both in images and in three-dimensional models.		20%	10%	30%
Assmt. Cr. 4: Identifies and locates the neuroanatomical structures and circuits involved in sensory and motor systems and demonstrates an understanding of their complex mechanisms of functioning.		15%	5%	20%
Assmt. Cr. 5: Analyzes in depth the key elements related to the possible alterations that may affect the different sensory systems and the motor system, as well as the manifestations of neuroplasticity in the human nervous system.		15%		15%
		85%	15%	100%

Assessment procedure

The assessment system is governed by the regulations on learning assessment processes of the University of Alcalá and is characterized by the following guidelines:

1. Assessment periods:

In accordance with Article 6.2 of the UAH assessment regulations, students enrolled in this course are entitled to two assessment periods: one ordinary session in May and one extraordinary session in June.

a) Ordinary session: it will be conducted:

- **Primarily under the continuous assessment modality** (see requirements below in section 2). If the student does not meet these requirements, they will not be allowed to sit the ordinary session exam and will be recorded as *Not Presented* (in accordance with Article 9.5 of the UAH assessment regulations) and must then take the exam in the extraordinary session.
- **Under the final assessment modality**, if the student has previously requested it. Thus, if a student is unable to follow continuous assessment in the ordinary session, they must request final assessment within the first two weeks of the course, following the procedure established by the Centre. The instructor must indicate whether they agree with granting final assessment and forward this response to the Deputy Directorate of Academic Planning of the Centre for final resolution. Grounds for eligibility for final assessment, subject to case-by-case evaluation, include internships requiring attendance, work obligations, family responsibilities, health reasons, and disability (Article 10.2 of the UAH assessment regulations).

Students who did not request final assessment at the beginning of the course and who have not met the continuous assessment criteria may not opt for final assessment in the ordinary session (Articles 9.5 and 10.2 of the UAH assessment regulations).

b) Extraordinary session: it will be conducted:

- **Under the continuous assessment modality**, for those students who have met the continuous assessment criteria (see section 2), but who either did not sit or did not pass the ordinary session exam.
- **Under the final assessment modality**, for those students who:
 - have not met the continuous assessment criteria in the ordinary session
 - requested final assessment at the beginning of the course but did not sit the final exam in the ordinary session.

2. Assessment modalities:

There are two assessment modalities: continuous and final (Articles 9 and 10 of the aforementioned regulations).

a) Continuous assessment:

The type, characteristics, and modality of the instruments and strategies that form part of the assessment process, as well as their weighting, must be based on the student's continuous assessment (Articles 9.1 and 9.2). Continuous assessment is defined (Article 3.h) as a system that includes the evaluation of the development of competencies (acquisition of theoretical and practical knowledge, capacities, skills, abilities, attitudes) throughout the entire learning process of the course. This process uses different strategies and collects evidence related to the entire teaching–learning process. This does not preclude the possibility of including evidence from a final test.

- **Requirements and characteristics of continuous assessment** (in accordance with Articles 9.3 and 9.4 of the regulations):
 - Attendance and submission of assigned activities (at least 75%), following the specified submission procedure and deadlines.
 - Any absence from class and/or failure to submit an activity must be justified. In any case, justification will allow the student to retain eligibility for continuous assessment but does not imply that the activity can be made up or submitted late.

- **Assessment tools under the continuous modality:**
 - Theoretical content will be assessed through a written test, which will always include at least one section with neuroanatomy atlas images, and may also take into account participation and classwork.
 - Practical sessions will be assessed through oral presentations (practices 1 and 2) and written tests (practices 3, 4, and 5).
 - In seminars, oral participation will be assessed, along with the completion and/or submission of a written test demonstrating in-depth knowledge of the assigned readings.
 - The exam will consist of:
 - Multiple-choice questions with 3 or 4 answer options, where incorrect answers will be penalized according to the formula $A - (E/n-1)$ (where A = correct answers; E = incorrect answers; n = number of answer options).
 - Open-ended questions on the theoretical contents of the course.
- b) **Final assessment:**
 - **Assessment tools under the final modality:**
 - Practices 3, 4, and 5 (described in the Methodology section and in the continuous assessment section) may be completed independently by students under final assessment and, if submitted, will subsequently be evaluated through a written test ("practical test" in the table above).
 - The exam will consist of:
 - Multiple-choice questions with 3 or 4 answer options, with penalties for incorrect answers according to the formula $A - (E/n-1)$.
 - Open-ended questions on the theoretical contents of the course.
 - Neuroanatomy atlas images.
 - Questions on the contents covered in practice 1 and seminars 1 and 2.

In order to demonstrate adequate development of the competencies associated with the course, and given that not all assessment tools measure the same competencies to the same extent, students must complete and pass at least the exam and the individual theoretical-practical activities (in the continuous assessment modality), or the exam (in the final modality), with a minimum score of 50% in each component.

3. Guidance Service:

The teaching-learning methodology and the assessment process will be adapted when necessary, in accordance with the guidance of the CUCC Guidance Service and/or the UAH Diversity Support Unit, to implement curricular adaptations for students with specific needs, upon submission of documentation certifying such needs.

4. Code of Conduct and Disciplinary Regulations:

During assessment activities, students must adhere to the regulations established in the University of Alcalá's Code of Conduct, as well as the implications of any irregularities committed during such assessments, including the consequences of academic fraud as defined in the Student Disciplinary Regulations of the University of Alcalá.

5. Link to assessment regulations:

For further information on assessment regulations, please consult the following link:
<https://www.uah.es/export/sites/uah/es/conoce-la-uah/organizacion-y-gobierno/.galleries/Galeria-Secretaria-General/Normativa-Evaluacion-Aprendizajes.pdf>

6. BIBLIOGRAPHY

For the contents on neuroanatomical and physiological bases:

Carlson, N.R. (2014). *Fisiología de la Conducta*. Madrid: Pearson.

This is a basic book for any student of Psychology within the field of neuroscience. It exposes the anatomy and physiology of the brain and the functioning of the different sensory and motor systems, sleep, feeding, and many other biological processes. It is highly recommended.

Diamond, M. C.; Scheibel, A. B. y Elson, L. M. (2014). *El cerebro humano. Libro de trabajo*. Barcelona: Ariel.

This book is highly recommended for the student who starts with the anatomy of the nervous system. It presents many schematic drawings of the different structures of the nervous system and allows them to be coloured by means of a chromatic code that greatly facilitates the learning of these structures.

Enríquez de Valenzuela, P. (2014). *Neurociencia Cognitiva*. Madrid: Sanz y Torres.

This text of Cognitive Neuroscience offers a current vision of the main contributions of the discipline to the study of psychological processes in human subjects.

Kandel, E.R.; Schwartz, J.H., Jessell, T.M. (2001, 4ª Ed.) (Eds.). *Principios de Neurociencia*. Madrid: McGraw Hill/Interamericana.

This book exhaustively presents the anatomy and physiology of the central nervous system from a biological perspective, and is not only oriented to medical students, but also to students of Psychology who want to deepen the contents of the subjects of Neuroscience.

Redolar Ripollo, D. (2013) *Neurociencia Cognitiva*. Madrid: Ed. PANAMERICANA

This book presents the contents of cognitive neuroscience from a multidisciplinary perspective by using approaches based on teaching competencies. Special emphasis is given to the understanding of the different mechanisms and systems of nervous system functioning. It addresses the cognitive processes, reinforcement, sexual behaviour, sleep and consciousness. The work is accompanied by a multitude of pedagogical resources: graphic material to summarize some of the cardinal aspects of the topics developed, highlighted texts in each chapter reinforcing the main text, such as a conceptual summary, key concepts and complementary texts and a website containing different learning resources including videos, complementary content and self-assessment questions.

Another recommended bibliography for this area:

Colmenares Gil, F. (2013) *Bases Biológicas de la Conducta I*. Madrid: Centro de Estudios Financieros.

Del Abril Alonso, A. y cols. (2009) *Fundamentos de psicobiología*. Madrid: Sanz y Torres.

Kalat, J. (2004). *Psicología Biológica*. Madrid: Paraninfo.

Perea, M.V. (2010). *Fundamentos Biológicos de la Conducta: Libro de Trabajo*. Amaru Ediciones.

Pinel, J. (2007). *Biopsicología*. Madrid: Pearson Educación.

Rosenzweig, R.; Breedlove, M.; Watson, N. y Morgado, I. (2005) *Psicobiología: una introducción a la neurociencia conductual, cognitiva y clínica*. Barcelona: Ariel.

For contents related to normal and altered psychological processes:

Junqué, C. y Barroso, J. *Manual de Neuropsicología*. Madrid: Síntesis, 2009.

A complete handbook suitable as introductory text to neuropsychology; it is simple yet technical. Suitable and understandable for undergraduate students.

Kolb, B. Y Whishaw, I.Q. (2006, 5ª Ed.). *Neuropsicología Humana*. Madrid: Médica Panamericana.

This handbook includes an extensive review of anatomy and physiology, as well as cognitive, experimental and clinical psychology. Part I provides the basic information needed for those who start studying the brain. The following parts consider the relationships between brain and behaviour by focusing first on the general organization of the cerebral hemispheres (Part II) and anatomy (Part III), and then on psychological functions (Part IV). Finally, Part V explains the neurological disorders and their rehabilitation.

Lezak, M., Howieson, D.B. y Loring, D.W. (2004) (5th Ed.). *Neuropsychological Assessment*. New York: Oxford University Press.

Comprehensive classic handbook of Neuropsychology that has incorporated advances in neuroimaging and knowledge about the structure and functions of the brain by presenting coloured neuro-radiological images of both healthy and pathological brains in its successive editions. It analyses both classic and modern batteries and tests for neuropsychological assessment. It is the most widely referenced handbook used in neuropsychological evaluation. It is recommended for students interested in this field of knowledge who want to study it in depth and are proficient in English.

Peña-Casanova, J. (2007). *Neurología de la Conducta y Neuropsicología*. Madrid: Médica Panamericana.

Thirty-one professionals from different clinical, university and research fields make updated contributions in neurology of behaviour and neuropsychology: the relationships between the brain and behaviour, cognitive capacities and emotions. The book ranges from biological bases of behaviour to rehabilitation, including the following neuropsychological disorders: aphasia, apraxias, agnosias, alexias, agraphias, disorders of the corporal scheme, acalculias, amusias, amnesias, executive function disorders and dementias.

Portellano, J.A. (2005). *Introducción a la Neuropsicología*. Mc Graw Hill.

The book is intended for professionals and students in the healthcare, educational or psychosocial fields interested in brain damage. Neuropsychology, along with other disciplines involved in this pathology, aims to improve the diagnosis, treatment and guidance of brain damage, with the purpose of improving the quality of life of the affected people.

Sacks, O. (2006). *El Hombre que Confundió a su Mujer con un Sombrero*. Barcelona: Anagrama.

Sacks, O. (1995). *Un antropólogo en Marte*. Barcelona: Anagrama.

These two works from Sacks are essential for the student of Neuropsychology, as they bring the student closer to the evaluation and symptomatology of different clinical cases using simple, pleasant and close language. It is compulsory reading for the future psychologist.

Tirapu Ustárriz, J., Ríos Lago, M. y Maestú Unturbe, F. *Manual de Neuropsicología*. Barcelona: Viguera, 2008

This handbook written by three Spanish professionals of Neuropsychology makes a comprehensive review of normal and pathological processes in the different cognitive domains, proposing assessment tests for each one. It is also suitable for undergraduate students.