

Internationalization Programs Study Abroad 2020

Course title: Introduction to Neuroscience

Teaching period: July 6 to July 30, 2020

Teaching hours: 80

Academic coordinator: Santiago Mora Parada

Knowledge area: Experimental Psychology

1. INTRODUCTION

Nowadays, neuroscience plays a crucial role in the field of Psychology, from its most basic study to its clinical applicability. The growing research in neuroscience has led to the development of new clinical tools which provide an important bunch of knowledge in order to treat Nervous System affections. Thus, it is mandatory to instruct qualified personal in neuroscience field, capable of performing both research and clinical application functions in a professional and rigorous manner. This course aims to provide additional education in neuroscience to Psychology students or anyone interested in clinical or research neuroscientific field.

University of Almería offers numerous subjects about neuroscience especially for Psychology degree students. Neuroscience is also an important subject in Masters like the official Master in Nervous Systems Sciences. Neuroscientific viewpoint is presented in the University of Almería by qualified and experienced professors and lecturers in the field. Faculty members and other prestigious experts will participate in the course in order to provide to the students enough knowledge, skills and tool to work as neuroscientist.

Being a universal discipline whose peculiarities do not vary depending on the country in which it is exercise, neuroscience should be especially attractive for international students who are interested in new fields of study and further tools for understanding behavior. The development of this course is supported by the Faculty of Psychology of the University of Almeria and the CTS-280 group: Psychopharmacology, neurotoxicology and neuropsychology.

2. OBJECTIVES

1. To know the basics of Neuroscience
2. To distinguish different study paradigms in Neuroscience
3. To get familiar with the most used tools in Neuroscience, including neuroimaging,

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- neurostimulation and neurobehavioral paradigms.
4. To know the neurofunctional basis of psychological processes such as emotion, inhibitory control and personality: from basic studies to psychopathology.
 5. To know the latest advances in neuroscientific field.
 6. To know about the applicability of Neuroscience: the real work of a Neuropsychologist in rehabilitation.

3. CONTENT

Modules	Description
MODULE 1: <i>[Introduction to experimental and clinical Neuroscience]</i>	<ul style="list-style-type: none"> ● What is Neuroscience? ● How does Neuroscience help in psychological diseases? ● Introduction to Neuroscience: animal research. ● Introduction to Neuroscience: human research.
MODULE B: <i>[Neuroscience of emotion]</i>	<ul style="list-style-type: none"> ● Emotion disorders: depression, anxiety, posttraumatic stress disorder, bipolar disorder, phobias, etc. ● Study of emotion in animals. ● Study of emotion in humans. ● PRACTICE: Virtual visit to the Basic Psychology Laboratory of the University of Almeria in order to know closely about the most used techniques in neuroscience of emotion research field.
MODULE C: <i>[Neuroscience of inhibitory control]</i>	<ul style="list-style-type: none"> ● Inhibitory control disorders: substance use disorders, pathological gambling, attention deficit hyperactivity disorder, obsessive compulsive disorder, etc. ● Study of inhibitory control in animals. ● Study of inhibitory control in humans. ● PRACTICE: Virtual visit to the Basic Psychology Laboratory of the University of Almeria in order to know closely about the most used neurobehavioral paradigms in neuroscience of inhibitory control research field.
MODULE D: <i>[Neuroscience of personality]</i>	<ul style="list-style-type: none"> ● Personality disorders: borderline personality disorder, schizoid personality disorder, paranoid personality disorder, etc. ● Study of individual differences in animals. ● Study of individual differences in humans. ● Personality traits ● PRACTICE: Self-assessment of personality traits through standardized questionnaires: application, correction and interpretation.

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MODULE E: [“Neurosci-fi”]

The most current and innovative ideas that are shaking the current panorama of Neuroscience (artificial intelligence, brain transplants ...) will be addressed, sharing the latest advances in the field of the study of the Nervous system, discussing its feasibility and scientific rigor, as well as proposing ideas for improvements and potential applications.

4. METHODOLOGY

The course will be taught in Spanish and English (both modalities applied). The methodology will be practical, since the content will be approached from an applied perspective, both at the research and clinical level. A climate of active participation will be created, where the student is invited to reflect, debate and active participation. New technologies, such as the Kahoot app, will be incorporated into the classes. Interviews, films, or mini-documentaries relevant to the course content will be screened. In addition, in each module the tools used in the study of each thematic area will be closely understood: the most current neurobehavioral tests, questionnaires, neuroimaging devices, behavioral measures and neurostimulation techniques will be used through laboratory virtual visits which are detailed below. Through the evaluation process, it is intended that students develop their ability to search for information, synthesis and exposure. The course will count with the participation of two professional experts, who will carry out a Q&A (Questions and Answers) conference to learn about the professional field of Psychology from a clinical as well as a neuropsychological perspective.

5. PROFESSIONAL VISITS AND COMPLEMENTARY ACADEMIC ACTIVITIES

Visits to a research center within the Campus:

- 1) Virtual visit to the Basic Psychology Animal Laboratory of the University of Almería: learn about the basic techniques of animal experimentation.*
- 2) Virtual visit to the Basic Psychology Human Laboratory of the University of Almería: the role of the subject and the experimenter.*

Activity of questions and answers (Q&A) from professionals outside the campus:

- 1) Q&A conference with Diego Díaz Gutiérrez (Collegiate Number: AO11029), Clinical Psychologist who is also part of the Psychological Center of the University of Almería.*
- 2) Q&A conference from the Instituto de Neurorehabilitación InPaula S.L. Spin-off company of the University of Almería with Young Innovative Company mention by AENOR.*

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6. ASSESSMENT

To pass the course, it will be necessary to attend at least 80% of the online hours, as well as the realization of a report at the end of the course on one of the topics offered by the teaching staff at the beginning of the course.

7. LECTURERS

The teaching team is composed of Teaching and Predoctoral and Postdoctoral Researcher in Psychology from the University of Almería, specialized in Neuroscience.

- **Ana Sánchez-Kuhn**, PhD in Psychology. Currently, she is hired as postdoctoral researcher of the Faculty of Psychology of the University of Almería. She was an Interim Substitute Professor during academic course 2018/2019 and performed a research stay in the Research Center of Learning Psychology and Experimental Psychopathology at the University of Leuven (Belgium). She is mainly focused in neurostimulation research field. She has 7 JCR articles and two book chapters.
- **Santiago Mora**, PhD in Psychology, he was an FPI fellow and now he is Interim Substitute Professor and a postdoctoral researcher in the Department of Psychology of the University of Almería. He performed a research stay in the Research Laboratory for Stereology and Neuroscience of Bispebjerg-Frederiksberg Hospital (Copenhagen, Denmark) in 2016 and other in the Institute of Biomedicine and Biotechnology of Cantabria (IBBTEC, Santander) in 2018. He is mainly focused in the neurochemistry and immunology of inhibitory control disorders. He has 6 JCR publications.
- **Elena Martín**, predoctoral FPU fellow in the Department of Psychology of the University of Almería. Her research area focuses on vulnerability to compulsivity, studying the brain and behavioral patterns that underlie this impulse control deficit. She performed two research stays, one of them in the Department of Psychology at the University of Cambridge (Cambridge, UK) in the summer of 2018 and the other in the Department of psychiatry at the University of Michigan (Ann Arbor, US). She also has 3 JCR publications.
- **José Juan León**, predoctoral FPU fellow in Department of Psychology of the University of Almería. His research area focuses in the study of neuroanatomical and behavioral basis of decision-making processes in impulsive-compulsive spectrum disorders. He has published 2 JCR articles.
- **Ángeles Prados**, predoctoral researcher hired under the MICCIN-FEDER Project (number PGC2018-099117-B-C21). His research area focuses on vulnerability to compulsivity, studying the different brain and behavioral patterns that underlie this impulse control



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deficit. He has performed a stay in the Department of Psychology at the University of Cambridge (Cambridge, UK). She has 3 JCR publications.

- **Pilar Fernández**, General Health Psychologist and FPU predoctoral fellow in the Department of Basic Psychology of the University of Almería. Her research area focuses on the behavioral and neurobiological study of mental health disorders related to impulse control, especially in children and adolescents. She also has clinical experience after two years working in the Institute of Child Neurorehabilitation InPaula and with a four-month internship in a private hospital. She has published 1 JCR article.

Organized by:

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