



# **D**octorate Programmes

Arts and Humanities  
Sciences and Engineering  
Health Sciences  
Social Sciences and Law



### WHY DO A DOCTORATE AT THE COMPLUTENSE UNIVERSITY OF MADRID (UCM)?

The UCM is a leading university with a long history and an international reputation in the field of research. It occupies one of the highest positions in a range of national and international rankings. According to the Academic Ranking of World Universities (ARWU, 2018), our university stands in 2nd place in the Spanish system, 82nd in Europe, and occupies a position of between 201 and 300 at world level; in the QS World University Ranking (QS, 2019), the UCM is 4th out of all Spanish universities, 92nd in Europe and 206th in the world.

### A UNIVERSITY IN THE CENTRE OF MADRID

The UCM is based in the heart of the capital, in the fantastic setting of the “Ciudad Universitaria”, a campus now 90 years old and that was intended from the start to be an example of how nature and science can blend together.

### WHAT IS THE UCM DOCTORATE SCHOOL AND WHERE IS IT?

The Regulations for the Complutense University of Madrid Doctoral School (known by its Spanish initials as EDUCM) were approved by the Board of Governors on 29 November 2016. The EDUCM is a study centre operating under the auspices of the Vice-Rectorate for Scientific, Research and Doctoral Policy and was set up for the purpose of organising PhD level teaching and other activities into 4

subject areas: Arts and Humanities, Social Sciences, Health Sciences and Science and Engineering.

The EDUCM is based on floor -1 of the Student Building.

### MAIN INITIATIVES AND CHALLENGES AT THE UCM DOCTORAL SCHOOL

The UCM has around **6,000 students enrolled on 58 PhD programmes**, all of which are focused on delivering formal and specific teaching on research techniques leading ultimately to the production of the PhD thesis.

The Complutense University of Madrid Doctoral School (EDUCM) delivers a range of training activities, workshops, competitions and seminars addressed to the entire university community, with special attention to PhD candidates. Focusing on PhD students, a series of methodological training activities have been designed to complement and support those offered by the various programmes. Such activities are organized by area of knowledge and taught by our own professors and experts from other institutions. They are intended to complement and support the content of each PhD programme. With a view to collaborating in the integration of our PhD students in teaching activities, we also run an introduction to university teaching aimed at our university teacher training (FPU) recruits.

The EDUCM, with the collaboration of the Vice-Rectorate for Students, also promotes **PhDay Complutense**, an initiative coordinated by PhD students

## Doctorate Programmes

that aims to strengthen the relationship between researchers from our various centres and encourage knowledge transfer. The first edition of PhDay Complutense, held during the 2017-2018 academic year, was attended by 19 faculties and more than 1,000 PhD students. Twenty-five faculties are already involved in the second edition of this event.

The EDUCM also joined the joint call issued by universities in Madrid (University of Alcalá, Autonomous University of Madrid, King Juan Carlos I University and the UCM) for the **Thesis in 3 Minutes** competition. The competition started at the University of Queensland in Australia, with the aim of making society aware of the work done by trainee researchers and encouraging them to take an interest in disseminating and passing on their scientific activity. The second event, held in the 2017-2018 academic year, attracted around 100 UCM participants. The winners in each field of knowledge went on to represent UCM in the Madrid universities competition.

One of the challenges facing the EDUCM is to foster an international profile for our PhD students; to do this the School is a member of the **Europaeum Scholars Programme**, a consortium of fifteen prestigious European universities offering selected PhD students the chance to receive specific training at a number of European research centres. In addition, as a member of the **UNA Europe University Alliance** (a strategic alliance formed by the Freie Universität Berlin,

Alma Mater Studiorum-Università di Bologna, Uniwersytet Jagiellonski w Krakowie, KU Leuven, Université Paris 1 Panthéon Sorbonne and the Complutense University of Madrid) the EDUCM, in conjunction with the Vice-Rectorate for International Relations, has provided support for the **Doctoral Workshop on Cultural Heritage**.

One of the aims of the EDUCM is to foster integration and promote **diversity in our university**. In collaboration with the Diversity and Inclusion Support Unit, we have developed a workshop to promote diversity in research teams and processes. In addition to this, a workshop is has also been devised especially for **UCM teaching staff** to enhance their skills concerning the supervision of PhD theses.

### DOCTORATES WITH INTERNATIONAL MENTION

The UCM gives students the chance to follow a PhD programme with International Mention. The huge number of agreements the UCM has signed with top international universities means that our PhD students can spend time doing their research abroad and also opens up possibilities for them to do their thesis under joint supervision.

### INDUSTRIAL PHD PROGRAMMES

Student can study for an Industrial PhD at the UCM, as this is one of the strategic lines of the Vice-Rectorate for Scientific, Research and Doctoral Policy and of the EDUCM itself. The

programme can be accessed by means of calls for applications issued by the government and the Community of Madrid for this purpose. This strengthens the relations between the business community and the university, increasing opportunities for our PhD students to find employment in both the public and private sectors.

### DID YOU KNOW THAT...?

1. Do you want to do your PhD thesis at the UCM? The UCM has a Doctoral School with new headquarters and a new web site. Find out more on <https://edotorado.ucm.es>
2. Did you know that the UCM Doctoral School delivers 58 PhD programmes in the subject areas of Health, Arts and Humanities, Science, Engineering and Social and Legal Sciences? You can sign up on <https://edotorado.ucm.es/estudios/doctorado>
3. Are you doing your thesis at the UCM and want to take part in some educational activities? Did you know that the UCM Doctoral School runs a series training activities for our PhD students? Find out more on <https://edotorado.ucm.es/area-de-formacion>
4. Do you think you could present your thesis in 3 minutes? The UCM Doctoral School holds the “Thesis in 3 Minutes” competition every year. Go on, you’ll never forget it, [https://edotorado.ucm.es/noticias/ii-concurso-tesis-en-3-minutos\\_1](https://edotorado.ucm.es/noticias/ii-concurso-tesis-en-3-minutos_1)
5. Did you know that the UCM Doctoral School, in conjunction with the Vice-Rectorate for Students, runs the PhDay event in each of its faculties? Find out more on <https://edotorado.ucm.es/2-jornada-phday-complutense>
6. Do you want to do your PhD thesis in a company? The UCM Doctoral School has developed the regulations for obtaining the Industrial PhD Mention. <https://edotorado.ucm.es/doctorado-industrial> and you can also apply for a grant, [www.ucm.es/pr54-18](http://www.ucm.es/pr54-18)
7. Did you know that the UCM Doctoral School, in conjunction with the Vice-Rectorate for International Relations, promotes the internationalisation of our PhD programmes with a range of options? <https://europaeum.org/category/news>; [www.ucm.es/becas-y-ayudas](http://www.ucm.es/becas-y-ayudas)
8. You have a PhD from another country and you want to have your qualification approved. The UCM Doctoral School processes the equivalent qualifications for PhDs obtained abroad? <https://edotorado.ucm.es/solicitud-de-equivalencia>
9. Did you know that the UCM Doctoral School runs a number of workshops to train our teaching staff in PhD supervision? <https://eventos.ucm.es/14742/detail/taller-sobre-direccion-de-tesis-doctorales.html>

# Arts and Humanities

## FINE ARTS

**Centre:** Faculty of Fine Arts

**Places available:** 60

**Web site:** [edotorado.ucm.es/estudios/doctorado-bellasartes](http://edotorado.ucm.es/estudios/doctorado-bellasartes)

**Lines of research:**

- Artistic Production
- Design
- Cultural Heritage Conservation and Restoration
- Teaching Plastic Expression
- Visual Studies
- Multimedia
- Performing Arts

## RELIGIOUS SCIENCES

**Cross-faculty:** Philology, Philosophy, Geography and History and University Institute for Religious Sciences

**Places available:** 20

**Web site:** [edotorado.ucm.es/estudios/doctorado-cienciasdelasreligiones](http://edotorado.ucm.es/estudios/doctorado-cienciasdelasreligiones)

**Lines of research:**

- History of Religions
- Philosophy, Thought and Religion
- Society, Ideology and Religion
- Religions in their Texts

## ANCIENT WORLD STUDIES

**Cross-faculty:** Philology and Geography and History

**Joint:** Autonomous University of Madrid

**Places available:** 25

**Web site:** [edotorado.ucm.es/estudios/doctorado-mundoantiguo](http://edotorado.ucm.es/estudios/doctorado-mundoantiguo)

**Lines of research:**

- History of Antiquity
- Archaeology and Heritage
- Greek Philosophy and Indo-European Studies
- Latin Philology
- Classical Survival and Tradition

## FRENCH STUDIES

**Centre:** Faculty of Philology

**Places available:** 10

**Web site:** [edotorado.ucm.es/estudios/doctorado-estudiosfranceses](http://edotorado.ucm.es/estudios/doctorado-estudiosfranceses)

**Lines of research:**

- Theoretical and Applied French Linguistics and their Relation with other Linguistic Areas
- French Literature and Comparative French Literature and its Relation with other Similar Areas

## LITERARY STUDIES

**Centre:** Faculty of Philology

**Places available:** 30

**Web site:** [edotorado.ucm.es/estudios/doctorado-estudiosliterarios](http://edotorado.ucm.es/estudios/doctorado-estudiosliterarios)

**Lines of research:**

- Themes, Motifs and Forms in European Literature
- New Writings and Forms of Reception in Fiction and the Arts in Contemporaneity
- Inter and Trans-culturality in the European Space

## THEATRE STUDIES

**Cross-faculty:** Philology and the Madrid University Theatre Institute

**Places available:** 20

**Web site:** [edotorado.ucm.es/estudios/doctorado-estudiosteatrales](http://edotorado.ucm.es/estudios/doctorado-estudiosteatrales)

**Lines of research:**

- Edition and Critique of Drama Texts
- History and Theory of Theatre
- Comparative Theatre

## PHILOSOPHY

**Centre:** Faculty of Philosophy

**Places available:** 50

## PHILOSOPHY (Continued)

**Web site:** [edotorado.ucm.es/estudios/doctorado-filosofia](http://edotorado.ucm.es/estudios/doctorado-filosofia)

**Lines of research:**

- Epistemology, Logic and Philosophy of Science
- Theoretical Philosophy and History of Philosophy
- Practical and Aesthetic Philosophy

## CONTEMPORARY HISTORY

**Centre:** Faculty of Geography and History  
Joint: Autonomous University of Madrid, University of Cantabria, University of Santiago de Compostela, University of Zaragoza, University of the Basque Country/Euskal Herriko Unibertsitatea and Universitat de València (Estudi General)

**Places available:** 21

**Web site:** [edotorado.ucm.es/estudios/doctorado-historiacontemporanea](http://edotorado.ucm.es/estudios/doctorado-historiacontemporanea)

**Lines of research:**

- The State and the Public Space
- Identities, Nation and Nationalism
- Rural Societies, Urban Societies
- Cultural History and History of Political Ideas
- History of International Relations
- Social Change and Economic Transformations
- Historiography and Politics of Memory

## ART HISTORY

**Centre:** Faculty of Geography and History

**Places available:** 20

**Web site:** [edotorado.ucm.es/estudios/doctorado-historiadelarte](http://edotorado.ucm.es/estudios/doctorado-historiadelarte)

**Lines of research:**

- Art History in the Middle Ages
- Art History in the Modern Era
- Contemporary Art History

## HISTORY AND ARCHAEOLOGY

**Centre:** Faculty of Geography and History

**Places available:** 70

**Web site:** [edotorado.ucm.es/estudios/doctorado-historiayarqueologia](http://edotorado.ucm.es/estudios/doctorado-historiayarqueologia)

**Lines of research:**

- Prehistory
- Archaeology
- Ancient History
- Medieval History
- Modern History
- Contemporary History
- History of America
- Anthropology of America
- Historiographic Science and Techniques

## SPANISH LANGUAGE AND LITERATURE

**Centre:** Faculty of Philology

**Places available:** 45

**Web site:** [edotorado.ucm.es/estudios/doctorado-lenguaespanola](http://edotorado.ucm.es/estudios/doctorado-lenguaespanola)

**Lines of research:**

- History of the Spanish Language
- Synchronic Spanish Grammar
- Applied Linguistics and Spanish Teaching
- Spanish Medieval History
- Spanish Literature in the Golden Ages
- Modern and Contemporary Spanish Literature

## ENGLISH LINGUISTICS

**Centre:** Faculty of Philology

**Places available:** 12

**Web site:** [edotorado.ucm.es/estudios/doctorado-inglesa](http://edotorado.ucm.es/estudios/doctorado-inglesa)

**Lines of research:**

- English Linguistics

## THEORETICAL AND APPLIED LINGUISTICS

**Centre:** Faculty of Philology

**Places available:** 30

**Web site:** [edotorado.ucm.es/estudios/doctorado-linguistica](http://edotorado.ucm.es/estudios/doctorado-linguistica)

**Lines of research:**

- Linguistics, Cognition and Communication
- Linguistic Studies. Cultural, Educational and Comparative Approaches

## LATIN AMERICAN LITERATURE

**Centre:** Faculty of Philology

**Places available:** 12

**Web site:** [edotorado.ucm.es/estudios/doctorado-literaturahispanoamericana](http://edotorado.ucm.es/estudios/doctorado-literaturahispanoamericana)

**Lines of research:**

- Latin American Literature

## MUSICOLOGY

**Centre:** Faculty of Geography and History  
**Joint:** University of Valladolid and University of La Rioja

**Places available:** 15

**Web site:** [edotorado.ucm.es/estudios/doctorado-musicologia](http://edotorado.ucm.es/estudios/doctorado-musicologia)

**Lines of research:**

- 19th-21st Century Spanish and Latin American Music
- Ancient Music and Musical Iconography



# Sciences and Engineering

## ASTROPHYSICS

**Centre:** Faculty of Physical Sciences

**Places available:** 10

**Web site:** [edotorado.ucm.es/estudios/doctorado-astrofisica](http://edotorado.ucm.es/estudios/doctorado-astrofisica)

**Lines of research:**

- Star Formation
- Protoplanetary Discs
- Substellar Objects and Planets
- Bipolar Flows and Accretion Discs Around Young Stars
- Evolution of Circumstellar Discs Precursors of Planetary Systems
- Cold Stars: Stellar Activity
- Stellar Evolution. Final Phases in the Life of Stars
- Masers
- Chemistry of the interstellar and Circumstellar Medium
- Transport of Radiation. Stellar and Planetary Atmospheres
- Binary Systems
- Physical Properties of Galaxies
- Elliptical Galaxies
- Stellar Content of Galaxies
- Chemical Evolution of the Universe
- Galaxies with Intense Star Formation
- Star Formation in a Cosmological Context
- Formation and Evolution of Galaxies and Galaxy Cumuli
- Activity in Galaxy Nuclei
- Galaxies with High Red Shift
- Chemistry of the Interstellar Medium in External Galaxies
- High-energy Astrophysics
- Molecular Astrophysics
- Physical Cosmology
- Large-scale Structure of the Universe
- Background Microwave Radiation
- Supercomputing. Hydrodynamic Codes
- Developing Hardware for Astronomical Instrumentation (Radio Astronomy, GTC, Observatories, etc.)
- Developing Software and Databases
- Dark Matter and Energy

### ASTROPHYSICS (Continued)

- Meteors, Shooting Stars, Meteorites and Space Junk
- Light Pollution

### BIOLOGY

**Centre:** Faculty of Biological Science

**Places available:** 60

**Web site:** [edoctorado.ucm.es/estudios/doctorado-biologia](http://edoctorado.ucm.es/estudios/doctorado-biologia)

**Lines of research:**

- Physical Anthropology
- Zoology
- Biodiversity and Evolutionary Biology
- Conservation Biology
- Plant Biology
- Botany
- Taxonomy and Biodiversity
- Landscape Ecology
- Systems Ecology
- Functional and Evolutionary Ecology
- Animal and Human Phylogenetics and Phylogeography
- Evolutionary Biology
- Genomic Diversity and Population Dynamics
- Comparative Neuroendocrinology
- Functionality of the Circadian System and Biological Rhythms
- Physiology of Wild Vertebrates
- Psychoneuroendocrinology
- Free Radicals and Ageing
- Psychophysiological Analysis in Animal Models of Neuropsychiatric Symptomatology and Addiction
- Genetic Evolutionary Models, Population Improvement and Conservation
- Fungi and Yeasts of Interest in Agrofoods
- Cytogenetic and Genome Analysis
- Biotechnology of Plants
- Abiotic Stress in Plants

### BIOLOGY (Continued)

- Molecular Markers in the Population Study of Species of Agronomic or Conservation Interest
- Ontogeny and Phylogeny of the Immune System
- VIP/PACAP System for the Treatment of Inflammatory and/or Autoimmune Diseases
- Evolution and Development of the Central Nervous System in Vertebrates
- Effect of Sexual Steroids on the Central Nervous System

### BIOCHEMISTRY, MOLECULAR BIOLOGY AND BIOMEDICINE

**Cross-faculty:** Biological Sciences, Chemical Sciences, Pharmacy, Medicine and Veterinary Sciences

**Places available:** 70

**Web site:** [edoctorado.ucm.es/estudios/doctorado-bioquimica](http://edoctorado.ucm.es/estudios/doctorado-bioquimica)

**Lines of research:**

- Pharmacological Biochemistry and Toxicology
- Biochemistry and Membrane Biophysics
- Biochemistry and Enzymatic Biotechnology
- Spectroscopy and Molecular Structure
- Structure and Function of Proteins and Proteomics
- Lipid-protein Interactions
- Gene Regulation Mechanisms
- Proliferation, Differentiation and Apoptosis
- Cell Signalling Mechanisms
- Molecular Microbiology
- Molecular Bases of Inflammatory Diseases
- Molecular Bases of Metabolic Diseases

### BIOCHEMISTRY, MOLECULAR BIOLOGY AND BIOMEDICINE (Continued)

- Molecular Bases of Respiratory Diseases
- Molecular Bases of Allergic Processes
- Molecular Bases of Cancer
- Molecular Bases of Nervous System Diseases
- Biomaterials and Tissue Engineering

### ECOLOGY

**Centre:** Faculty of Biological Sciences

**Joint:** Autonomous University of Madrid

**Places available:** 10

**Web site:** [edoctorado.ucm.es/estudios/dotorado-ecologia](http://edoctorado.ucm.es/estudios/dotorado-ecologia)

**Lines of research:**

- Ecology and Conservation of Land Ecosystems
- Ecology and Conservation of Aquatic Ecosystems
- Analysis and Management of Socio-Ecological Systems

### ECOLOGY. ECOSYSTEM CONSERVATION AND RESTORATION

**Centre:** Faculty of Biological Sciences

**Joint:** University of Alcalá, Polytechnic University of Madrid and King Juan Carlos University

**Places available:** 5

**Web site:** [edoctorado.ucm.es/estudios/dotorado-ecocon](http://edoctorado.ucm.es/estudios/dotorado-ecocon)

**Lines of research:**

- Conservation of Species and Ecosystems
- Biodiversity Restoration and Ecosystem Services
- Ecological Processes in Humanised Ecosystems
- Biogeography, Macroecology and Macroevolution

### ECOLOGY. ECOSYSTEM CONSERVATION AND RESTORATION (Continued)

- Biology of Global Change
- Conservation and Management of Forest and Agrosilvopastoral (ASPAS) Ecosystems
- Forest Genomics and Biotechnology
- Functional Ecology and Ecophysiology
- Evolutionary and Population-Community Ecology
- Aquatic Media Ecology and Ecohydrology

### INTERNATIONAL DOCTORAL COLLEGE IN FUSION SCIENCE AND ENGINEERING (FUSION-DC)

**Centre:** Faculty of Physical Sciences

**Joint:** Carlos III University of Madrid, University of Lisbon Higher Technical Institute (Portugal), Max-Planck-Institut für Plasmaphysik in Garching und Greifswald (Germany), Universiteit Gent (Belgium), Università degli Studi di Padova (Italy), Universität Stuttgart (Germany) and Université Henri Poincaré Nancy 1 (France)

**Places available:** 8

**Web site:** [edoctorado.ucm.es/estudios/dotorado-fusiondc](http://edoctorado.ucm.es/estudios/dotorado-fusiondc)

**Lines of research:**

- Fusion by Magnetic Confinement (Tokamaks and Stellarators)
- Plasma Theory and Computational Plasma Physics
- Plasma-Wall Interaction and Fusion Materials Research
- Plasma Diagnostics, Data Control and Analysis
- Fusion Technology and Engineering
- Industrial Plasmas
- Astrophysical Plasmas

## PHYSICS

**Centre:** Faculty of Physical Sciences

**Places available:** 40

**Web site:** [edotorado.ucm.es/estudios/doctorado-fisica](http://edotorado.ucm.es/estudios/doctorado-fisica)

**Lines of research:**

- Biophotonics
- Photonic Devices and Materials
- Image Formation and Processing
- Holographic Photomaterials
- Light Beam Generation and Characterisation
- Laser and Laser Technology
- Optical Metrology
- Nano-optics and Micro-optics
- Quantum Optics
- Non-linear and Ultra-fast Optics
- Theoretical Nuclear Physics
- Experimental Nuclear Physics
- High Frequency Electronics
- Astroparticle Physics
- Nuclear and Particle Physics Applied to Medicine
- Theoretical Statistical Physics
- Atomic and Molecular Spectroscopy
- Non-equilibrium Dynamics in Classical and Quantum Systems
- Modelling and Simulation in Complex Systems
- Fluid Transport in Membranes
- Membranes and Renewable Energy Sources
- Superconductivity
- Thin Films
- Magnetic Devices
- Condensed Matter Theoretical Physics
- Applied Magnetism
- Nanophysics
- Defects and Microstructure
- Statistical Physics
- Micro and Nano Material Characterisation
- Surface Physics
- Thin Films and Microelectronics
- Bioelectromagnetism

## PHYSICS (Continued)

- Cosmic Radiation Laser Emulation
- Electronic Instrumentation and Sensors
- Heterostructures and Supernetworks
- Complex Oxides
- Spintronics
- High Permittivity Dielectrics
- Medium Band Semiconductors
- Computer Technology
- Computer Architecture
- Climate Diagnostic and Modelling
- Paleoclimatology
- Meteorological Research
- Forecasting Systems
- Wind Power
- Atmospheric Modelling
- Martian Boundary Layer
- Climate Change
- Statistical Field Theory
- Fields and Ropes
- Non-commutative Space-Time
- Quantum Simulations
- Quantum Information and Computation
- Spin Glass
- Effective Theories of Cosmology
- Non-equilibrium Statistical Mechanics
- Energy and Dark Matter
- Paleomagnetism
- Ocean-Atmosphere Interaction
- Seismicity, Seismotectonics and Seismic Risk
- Magnetism and Topography on Mars
- Micrometeorology and Atmospheric Pollution
- Climate Variability and Troposphere-Stratosphere Interaction
- Space Meteorology, Ionosphere and Satellite Global Positioning Techniques
- General Circulation Theory and Modelling
- Lithospheric Modelling: Structure and Dynamics
- Integrable Systems and Spin Chains
- Quantum Chaos
- Number Analytical Theory

## PHYSICS (Continued)

- Propagation in Complex Networks
- Random Matrices
- Effective theories in Hadron Physics
- Quantum Chromodynamics
- Chiral Symmetry
- Hadron Spectroscopy
- Black Holes and Quantum Gravity
- Engineering and Automation Systems
- Robotics
- Systems Control

## GEOLOGY AND GEOLOGICAL ENGINEERING

**Centre:** Faculty of Geological Sciences

**Places available:** 25

**Web site:** [edotorado.ucm.es/estudios/doctorado-geologia](http://edotorado.ucm.es/estudios/doctorado-geologia)

**Lines of research:**

- Analysis of Sedimentary Basins
- Contamination and Recovery of Aquifers and Ground Water
- Crystallography and Crystallisation Processes
- Edaphology and Erosion, Degradation and Soil Conservation
- Geophysics and Geophysical Prospection
- Planetary Geology
- Geomorphology
- Geochemistry
- Environmental Geology and Land Use Planning
- Hydrology and Hydrogeology
- Geological Engineering
- Geological Materials Used in Architectural Heritage and in Construction
- Mineralogy
- Geological Modelling
- Neotectonics, Seismotectonics and Paleoseismology
- Paleoclimatology, Paleoenvironments and Climate Change

## GEOLOGY AND GEOLOGICAL ENGINEERING (Continued)

- Applied Paleontology
- Paleontology of the Proterozoic and the Phanerozoic Eons
- Human Paleontology
- Geological Heritage
- Sedimentary Petrology: Diagenesis, Geofluids and Provenance Analysis
- Tectonothermal Processes and Magmatism
- Geological Resources: Minerals, Energy and Others
- Geological Risks
- Sedimentology
- Tectonics and Structural Geology
- Vulcanism

## COMPUTER ENGINEERING

**Centre:** Faculty of Computing

**Places available:** 20

**Web site:** [edotorado.ucm.es/estudios/doctorado-informatica](http://edotorado.ucm.es/estudios/doctorado-informatica)

**Lines of research:**

- Heterogeneous Computing and Accelerators
- Energy Efficiency and Emerging Memory Technology
- Asymmetric Multicore Processing
- Energy Efficiency in Computing (Green Computing)
- Digital Systems Design Automation
- Bio-inspired Systems
- Dynamically Reconfigurable Hardware Management
- Dynamically Reconfigurable Hardware for Space Applications
- Hyperspectral Image Handling
- Distributed, Parallel and High Performance Computing
- Virtualization and Cloud Architecture
- Protocols and Security Architecture for Information and Communication Systems

### COMPUTER ENGINEERING (Continued)

- Technology Applied to Education
- Educational Games and Simulations
- Standardization in Education
- Formal Systems Specification and Verification Techniques
- Program Static Analysis and Type Systems
- Formal Models for Mobility and Security
- Secure Systems Development Based on Models
- Theoretical Foundations for Testing
- Specification and Analysis of Timed and Distributed Systems
- Multiparadigm Declarative Programming
- Formal Techniques for Program Optimisation and Comprehension
- Graphic Information
- Case-based Reasoning
- Recommendation Systems
- Digital Entertainment Systems Engineering
- Multi-agent Systems
- Complex Systems Simulation
- Artificial Intelligence Applications
- Mobile Robotics
- Systems Control
- Computer Vision
- Natural Language Processing
- Software Language Engineering and Grammar
- Computational Creativity

### MATHEMATICAL ENGINEERING, STATISTICS AND OPERATIONAL RESEARCH

**Centre:** Faculty of Mathematical Sciences

**Joint:** Polytechnic University of Madrid

**Places available:** 20

**Web site:** [edoctorado.ucm.es/estudios/doctorado-ingenieriamatematica](http://edoctorado.ucm.es/estudios/doctorado-ingenieriamatematica)

**Lines of research:**

- Mathematics for Engineering

### MATHEMATICAL ENGINEERING, STATISTICS AND OPERATIONAL RESEARCH (Continued)

- Interdisciplinary Mathematics
- Statistics and Stochastic Models
- Operational Research

### CHEMICAL ENGINEERING

**Centre:** Faculty of Chemical Sciences

**Places available:** 20

**Web site:** [edoctorado.ucm.es/estudios/doctorado-ingenieriaquimica](http://edoctorado.ucm.es/estudios/doctorado-ingenieriaquimica)

**Lines of research:**

- Extraction and Biorefining Processes Using Ionic Liquids
- Advanced Separation Processes Using Ionic Liquids: Carbon Dioxide Capture
- Development of New Phenolic Matrix Composite Materials Reinforced with Natural Fibres or with Lignin Nanoparticles
- Chemical Process Modelling and Simulation
- Paper Manufacturing Processes
- Applications of Cellulose in Industrial Processes
- Catalytic Processes in Fine Chemistry and Water Treatment
- Catalyst Synthesis and Characterization
- Adsorption-Desorption Processes
- Green Chemistry: Renewable Energy, Sustainable Development, Biorefineries
- Synthesis, Development, Optimisation, Design and Scale-up of Fine Chemistry Processes (Biotransformations, Bioproduct Purification)
- Development, Optimisation and Modelling of Biotechnology Processes (Enzymatic and Microbial) for the Production of “Platform Chemicals” and/or Waste Treatment

## CHEMICAL ENGINEERING (Continued)

- Development of New Thermal and Catalytic Processes for Biomass Revaluation
- Advanced Oxidation Treatments for Water Treatment
- Obtaining High Added Value Products
- Caprolactam Production
- *In Situ* Soil Remediation

## MATHEMATICAL RESEARCH

**Centre:** Faculty of Mathematical Sciences

**Places available:** 25

**Web site:** [edotorado.ucm.es/estudios/doctorado-investigacionmatematica](http://edotorado.ucm.es/estudios/doctorado-investigacionmatematica)

**Lines of research:**

- Algebra
- Mathematical Analysis
- Geometry and Topology
- Applied Mathematics

## ADVANCED CHEMISTRY

**Centre:** Faculty of Chemical Sciences

**Places available:** 40

**Web site:** [edotorado.ucm.es/estudios/doctorado-quimicaavanzada](http://edotorado.ucm.es/estudios/doctorado-quimicaavanzada)

**Lines of research:**

- Archaeometallurgy
- Corrosion and Protection of Steel, Intermetallics and Light Alloys
- Analytical Chromatography
- Electroanalysis and (Bio)sensors
- Molecular Spectroscopy. Dynamics of Chemical Reactions
- Laser Chemistry
- Surface Engineering and Joining Processes
- Nanochemistry and Nanomaterials. Soft Matter: Polymers, Colloids, Interphases and Biomaterials
- Quantum Chemistry: Modelling and Molecular Simulation

## ADVANCED CHEMISTRY (Continued)

- Chemistry of Coordination and Organometallic Compounds. Polyfunctional Molecular Materials
- Solid State Chemistry. Structure and Properties of Functional Materials. Development of New Materials
- Optochemical Sensors
- Thermodynamics. Chemistry at High Pressure and Temperatures; Supercritical Fluids
- Biohydrometallurgical Treatment of Minerals, Effluent and Soils
- Trace Elements, Speciation and Metallomics

## ORGANIC CHEMISTRY

**Centre:** Faculty of Chemical Sciences

**Places available:** 25

**Web site:** [edotorado.ucm.es/estudios/doctorado-quimicaorganica](http://edotorado.ucm.es/estudios/doctorado-quimicaorganica)

**Lines of research:**

- Molecular and Supramolecular Chemistry of Carbon Nanostructures such as Fullerenes, Carbon Nanotubes and Graphenes
- Molecular Cables, Pi-Conjugated Systems and Electroactive Materials for the Study of Photoinduced Electron Transfer Processes, Organic Photovoltaics and Nanoscience Applications
- New Fullerene Applications: Biomolecules, Enantioselective Synthesis and Organocatalysis
- Development of New Anti-tumour Agents in Particular Fatty Acid Synthase (FASN) Inhibitors and Isoprenylcysteine Carboxyl Methyltransferase (ICMT)
- Development of New Agents with Activity in the Central Nervous System (CNS)

### ORGANIC CHEMISTRY (Continued)

- Development of Antibiotics with New Mechanisms of Action: Bacterial Division Protein FtsZ Inhibitors
- Development of New Tools for the Identification of Therapeutic Targets
- Lactam Systems Chemistry: Synthesis, Reactivity and Application in the Preparation of Nitrogen Heterocycles of Biological Importance
- Development of New Processes of Cyclisation of Unsaturated Functionalised Systems Catalysed by Transition Metals. Application in the Synthesis Heterocycles of Biological Importance
- New Strategies in Asymmetric Synthesis: Organocatalysis and Multicomponent Reactions
- Development of New Applications in the Organic Synthesis of Transition Metal Complexes and Study of their Reaction Mechanisms
- Bio-Organometallic Chemistry
- Synthesis of New Chelation Agents for the Supply of Micronutrients in Agronomy
- Design and Development of New Energy Materials
- Synthesis of Organic Materials with and Photonic Applications
- Pi-Conjugated Systems Synthesis
- Synthesis of Organic Semiconductor Polymers
- Stereoselective Synthesis: Development of New Methodologies or Catalysts for Stereoselective Processes of Importance
- Supra and Macromolecular Chemistry: Development of New Supra and Functional Macromolecular Typologies for the Construction of Innovative Organic Materials
- Mechanism of Organic Reactions: Study of Reaction Mechanisms in Non-Conventional Organic Reactions

### ORGANIC CHEMISTRY (Continued)

- Photochemistry Applied to Chemical Analysis (Fibre Optic Sensors and Specific Luminescent Indicators), to the Environment, to Biology and to Medicine
- Amplification of Chirality in Supramolecular Structures
- Synthesis and Characterisation of Organic Polymeric Materials. Living/Controlled Radical Polymerisation (SFRP, ATRP, RAFT). Block and Graft Statistical Copolymers

### THEORETICAL CHEMISTRY AND COMPUTATIONAL MODELLING

**Centre:** Faculty of Chemical Sciences  
**Joint:** Autonomous University of Madrid, Universitat de Barcelona, University of Cantabria, University of Extremadura, Universitat de las Illes Balears, University of Murcia, University of Oviedo, University of Seville, University of Vigo, University of the Basque Country/Euskal Herriko Unibertsitatea, Universitat Jaume I de Castellón and Universitat de València (Estudi General)

**Places available:** 6

**Web site:** [edoctorado.ucm.es/estudios/doctorado-quimiccateorica](http://edoctorado.ucm.es/estudios/doctorado-quimiccateorica)

**Lines of research:**

- Molecular Structure and Chemical Reactivity
- Development of Simulation Methods in Chemistry
- Excited States and Photochemistry
- Computational Organometallic Chemistry
- Computational Biochemistry
- Laser-Induced Processes
- Solids and Surfaces
- Study of New Materials



# Health Sciences

## VISION SCIENCE

**Centre:** Faculty of Medicine

**Joint:** University of Alcalá, University of Murcia, University of Navarre (will withdraw from the program beginning in the 2020-2021 school year), University of Santiago de Compostela and University of Valladolid

**Places available:** 20

**Web site:** [edotorado.ucm.es/estudios/doctorado-vision](http://edotorado.ucm.es/estudios/doctorado-vision)

**Lines of research:**

- Retinal Degeneration
- Inflammatory Diseases of the Eye Surface
- Pain Assessment
- Glaucoma
- Optical Neuropathies
- Visual Optics

## DENTAL SCIENCES

**Centre:** Faculty of Dentistry

**Places available:** 30

**Web site:** [edotorado.ucm.es/estudios/doctorado-cienciasodontologicas](http://edotorado.ucm.es/estudios/doctorado-cienciasodontologicas)

**Lines of research:**

- Adhesion in Conservative Dentistry
- Smile Analysis and Dentofacial Cosmetics
- Sensory Analysis with Graphics Registers in Patients with Implant-Prosthesis
- Artificial Intelligence Application in Dentistry
- Biomaterials and Tissue Engineering
- CAD/CAM and New Technology in Prosthesis and Implant Prosthesis
- Oral Cancer and Pre-Cancer: Molecular Mechanisms, Clinical Epidemiology and Treatment
- Mouth Surgery and Implants
- Mouth and Maxillofacial Reconstructive Surgery
- Dental Colour and Colour Measuring Methods
- Orofacial Development and Care Protocols for Children with Special Needs

### DENTAL SCIENCES (Continued)

- Design and Implementation of Integrated Oral Health Intervention Programmes for Children with Special Needs
- Craniomandibular Dysfunction and Occlusion
- Prosthesis Education
- Acute Post-operative Pain. Chronic and Neuropathic Pain
- Orofacial Pain. Neuropathic Pain. Sedoanalgesia. Acupuncture
- Efficacy of Surgical and Regenerative Processes in Implantology
- Study of Etiological Factors, Pathogenics, Microbiology and Host Response in Periodontal Disease
- Study of Dental Risk Variables in the Population
- Study and Analysis of Friction Modifying Elements in Orthodontic Treatment with Multibracket Fixed Appliances
- Evaluation of Systemic and Local Antimicrobials in the Treatment of Periodontitis and in Dental Biofilm Control
- In Vitro Evaluation of Materials for Prosthetic Use
- Risk Factors of Bucco-dental Diseases
- Physiopathology of the Oral Cavity and HIV Infection
- Implant Prosthetics: Materials, Techniques and Clinical Protocols
- Teaching and Epidemiological Implications in the Integrated Adult Clinic
- Incorporation of New Preclinical Systems for Psychomotor Learning in Dentistry
- Influence of Systemic Factors on Implant Process and Prognosis
- Tissue Engineering
- Interaction between Orthodontic Treatment and the Temporo-Mandibular Joint
- Clinical Research into the Dental Prosthesis

### DENTAL SCIENCES (Continued)

- Research into Occlusion and Craniomandibular Dysfunction
- Lines and Methods of Research into Preventive and Community Dentistry
- Materials Used in Dentistry
- Materials in Endodontics
- Materials in Conservative Dentistry
- Molecular Mechanisms in Orofacial Pathology
- Mechanobiology of Regeneration in Maxillary Bones
- Inflammatory Mediators in Dentistry
- Craniofacial Morphology and Growth and its Interaction with Orthodontic Treatment
- Paediatric Dentistry Normality and Pathology. Determination of Therapeutic Protocols and Evaluation of their Applicability in Paediatric Dentistry
- New Diagnostic Tests in Surgery
- New Technology and Materials for Application in Paediatric Dentistry
- Evidence-based Dentistry
- Cosmetic Dentistry
- Children's Dentistry: Preventive and Restorative Dentistry
- Dental Retentions
- Pharmacological Therapeutics in Surgery
- Early Treatment of Class III Bone Malocclusion
- Cervicofacial Tumourations

### HEALTH CARE

**Centre:** Faculty of Nursing, Physiotherapy and Podiatry

**Places available:** 20

**Web site:** [edotorado.ucm.es/estudios/doctorado-cuidadosensalud](http://edotorado.ucm.es/estudios/doctorado-cuidadosensalud)

**Lines of research:**

- Research into Care

## PHARMACY

**Centre:** Faculty of Pharmacy

**Joint:** University of Alcalá

**Places available:** 60

**Web site:** [edotorado.ucm.es/estudios/doctorado-farmacia2011](http://edotorado.ucm.es/estudios/doctorado-farmacia2011)

**Lines of research:**

- Research into Food Science, Technology and Safety
- Research into Pharmacy and Pharmaceutical Technology
- Research into Pharmacognosy and Experimental Pharmacology
- Research into the Physiology and Pharmacology of the Urogenital Tract
- Research into Soil Formation, Degradation and Recovery
- Research into Nutrition, Dietetics and Health
- Research into Physical Chemistry in the Health Sciences
- Research into Inorganic and Bioinorganic Chemistry
- Research into Systemics, Biodiversity and Evolution
- Research into the Synthesis of Bioactive Compounds

## BIOMEDICAL RESEARCH

**Centre:** Faculty of Medicine

**Places available:** 40

**Web site:** [edotorado.ucm.es/estudios/doctorado-investigacionbiomedica](http://edotorado.ucm.es/estudios/doctorado-investigacionbiomedica)

**Lines of research:**

- Cardiac Pharmacology
- Neurovascular Pathology and Pharmacology
- Molecular Neuropsychopharmacology of Stress-Related Pathologies
- Neurobiology of 3,4-Methylenedioxymethamphetamine (MDMA, Ecstasy) and Methamphetamine
- Vascular and Translational Pharmacology

## BIOMEDICAL RESEARCH (Continued)

- Neurobiology of Ageing
- Molecular Bases of the Inflammatory Response to Cell Damage
- Molecular and Cellular Aspects of Immunomodulation
- Immunology and Immunopathology
- Molecular Bases of Metabolic Diseases. Nanomedicine and New Therapies

## RESEARCH INTO MEDICAL AND SURGICAL SCIENCE

**Centre:** Faculty of Medicine

**Places available:** 120

**Web site:** [edotorado.ucm.es/estudios/doctorado-medicoquirurgicas](http://edotorado.ucm.es/estudios/doctorado-medicoquirurgicas)

**Lines of research:**

- Research into Psychiatry
- Human Morphology and Development. Growth Factors
- Anatomical Variations of Clinical Value
- Research into Radiological Science: Medical Imaging, Radiotherapeutic Oncology and Medical Physics
- Women's and Children's Health
- Basic and Clinical Research in Surgery
- Public Health and Medical Humanities
- Basic and Clinical Research in Medicine

## MICROBIOLOGY AND PARASITOLOGY

**Cross-faculty:** Biological Sciences and Pharmacy

**Places available:** 30

**Web site:** [edotorado.ucm.es/estudios/doctorado-microbiologia](http://edotorado.ucm.es/estudios/doctorado-microbiologia)

**Lines of research:**

- Interaction between Host Microorganism and Antimicrobial Therapy
- Signalling, Microbial System Reprogramming and Microbial Biotechnology

## OPTICS, OPTOMETRY AND VISION

**Centre:** Faculty of Optics and Optometry

**Places available:** 20

**Web site:** [edotorado.ucm.es/estudios/doctorado-opticaoptometriayvision](http://edotorado.ucm.es/estudios/doctorado-opticaoptometriayvision)

**Lines of research:**

- Optics (Applied and Basic Aspects of Optics)
- Optometry and Vision
- Bio-Ophthalmology and Optic Materials

## PSYCHOLOGY

**Centre:** Faculty of Psychology

**Places available:** 60

**Web site:** [edotorado.ucm.es/estudios/doctorado-psicologia](http://edotorado.ucm.es/estudios/doctorado-psicologia)

**Lines of research:**

- Cognitive Neuroscience and Experimental Psychology
- Clinical and Health Psychology
- Social, Education and Work Psychology

## MEDICAL CHEMISTRY

**Centre:** Faculty of Pharmacy

**Joint:** University of Alcalá and University San Pablo-CEU

**Places available:** 10

**Web site:** [edotorado.ucm.es/estudios/doctorado-quimicamedica](http://edotorado.ucm.es/estudios/doctorado-quimicamedica)

**Lines of research:**

- Medical Chemistry
- Heterobetaines and Azinium and Azolium Ylides. Radical and Metal Mediated Reactions
- New Synthetic Methodologies Based on Domino and Multicomponent Reactions and their Application to the Synthesis of Bioactive Compounds
- New Neuroprotector Drugs and Prionic Protein Fluorescent Markers
- New Antitumorals Related to Marine Alkaloids
- New Drug Discovery and Development: Strategies and Innovation

## VETERINARY SCIENCES

**Centre:** Faculty of Veterinary Sciences

**Places available:** 50

**Web site:** [edotorado.ucm.es/estudios/doctorado-veterinaria](http://edotorado.ucm.es/estudios/doctorado-veterinaria)

**Lines of research:**

- Microbiology, Parasitology, Immunology and Animal Health
- Animal Medicine and Surgery
- Food Technology, Hygiene and Safety
- Animal Production, Nutrition and Genetics
- Toxicology and Pharmacology
- Animal Physiology, Endocrinology and Nervous System

# Social Sciences and Law

## BUSINESS ADMINISTRATION AND MANAGEMENT

**Centre:** Faculty of Economic and Business Sciences

**Places available:** 25

**Web site:** [edotorado.ucm.es/estudios/doctorado-ade](http://edotorado.ucm.es/estudios/doctorado-ade)

**Lines of research:**

- Management of Technology and Environmental Innovation
- Management and Administration of Knowledge and Organisational Learning
- Intellectual Capital, Social Capital, Human and Organisational Capital in Businesses and Inter-organisational Networks
- Big Data
- Efficiency and Productivity in Information and Communication Technology
- Supply Chain Administration and Relations with Suppliers
- Open Innovation
- Production Management
- Business Strategy and Corporate Growth Methods
- Business Creation and Entrepreneurial Behaviour
- Marketing and Consumer Behaviour
- Value Analysis: a. For the Customer (Consumer Behaviour, Experiential, Sensory, Neuromarketing); b. Of the Customer (Loyalty, CRM, etc.); c. Of the Brand and d. Corporate Social Responsibility
- Marketing Services (Tourist, Cultural, Sports, Leisure and Entertainment, Financial)
- Efficacy of Commercial Actions: Advertising, Promotional and other Non-Communicational Actions
- Quantitative Methods Applied to Economic and Financial Analysis

## DATA SCIENCE

**Centre:** Faculty of Statistical Studies

**Places available:** 12

**Web site:** [edotorado.ucm.es/estudios/doctorado-datascience](http://edotorado.ucm.es/estudios/doctorado-datascience)

**Lines of research:**

- Data Science

## DOCUMENTATION SCIENCES

**Centre:** Faculty of Documentation Sciences

**Places available:** 25

**Web site:** [edotorado.ucm.es/estudios/doctorado-documentacion](http://edotorado.ucm.es/estudios/doctorado-documentacion)

**Lines of research:**

- Documentation, Libraries, Archives and Bibliographic Heritage

## POLITICAL AND ADMINISTRATION SCIENCES INTERNATIONAL RELATIONS

**Centre:** Faculty of Political Sciences and Sociology

**Places available:** 70

**Web site:** [edotorado.ucm.es/estudios/doctoradopoliticasyrelacionesinternacionales](http://edotorado.ucm.es/estudios/doctoradopoliticasyrelacionesinternacionales)

**Lines of research:**

- Political Theory
- Political Geography
- History of Thought, Political Processes and Social Movements. 18th-20th Centuries
- Comparative Politics and Administration
- International Relations: Dynamics of Change in the Global Society
- Security, Cooperation and the European Union

## AUDIOVISUAL COMMUNICATION, ADVERTISING AND PUBLIC RELATIONS

**Centre:** Faculty of Information Sciences

**Places available:** 60

**Web site:** [edotorado.ucm.es/estudios/doctorado-comunicacionaudiovisual](http://edotorado.ucm.es/estudios/doctorado-comunicacionaudiovisual)

**Lines of research:**

- Audiovisual Creative and Organisation Communication Processes (Advertising and Public Relations)
- Theory, Analysis and Aesthetics of Audiovisual Texts in Advertising Messages and Public Relations
- Audiovisual, Hypermedia and Advertising Narrative
- Artistic and Aesthetic Trends in Audiovisual Communication, Advertising and Public Relations
- Economic and Social Management of Content Production and Audiovisual Services and of Advertising and Public Relations
- Digital Culture in Audiovisual and Advertising
- Legal and Ethical Aspects of Audiovisual Communication and Organisations (Advertising and Public Relations)
- International Relations in Audiovisual Communication and in Advertising and Public Relations
- Diagnostic, Evaluation and Management of Intangibles in Organisations (Advertising and Public Relations): Brand, Corporate Social Responsibility, Leadership and Reputation
- Planning Processes in Organisational Communication (Advertising and Public Relations)
- Application of Audiovisual Communication and of Organisations to Specialist Sectors (including Medical, Cultural, Artistic, Public, Business, Non-Profit, Social, Political, etc.)

## AUDIOVISUAL COMMUNICATION, ADVERTISING AND PUBLIC RELATIONS (Continued)

- Training and Professional profiles in Audiovisual Communication and in Advertising and Public Relations
- Audiovisual Technologies, their Impact and Applications, Especially Digital Content
- History of Film and Audiovisual Media and of Organisational Communication (Advertising and Public Relations)
- Management of Audiovisual and Advertising Documentary Heritage in Television, Radio, Film and Photography. Information and Documentation of the Audiovisual and of Organisations (Advertising and Public Relations)
- Interaction and Reception Processes in Audiovisual Communication and of Organisations (Advertising and Public Relations)
- Epistemological and Methodological Bases for the Study of the Diagnosis and Evaluation of Communication Efficacy
- Implications of the Effects of the Media for Organisational Communication
- Mass Culture and Consumption With Respect to Communication

## LAW

**Centre:** Faculty of Law

**Places available:** 90

**Web site:** [edoctorado.ucm.es/estudios/doctorado-derecho](http://edoctorado.ucm.es/estudios/doctorado-derecho)

**Lines of research:**

- Spanish Law and Comparative Studies
- Spanish, European and Comparative Constitutional Law
- International and European Law
- Employment and Social Security Law
- Company and Market Law

## LAW (Continued)

- Economic Analysis of Law, Public Economics and Political Economics
- Civil Law
- Religion, Law and Society
- Justice and Crime in Spanish Law
- History and Institutions of Roman Law
- Philosophy of Law, Morals and Politics
- Current and Comparative Structure of the Financial and Tax Code: Lines of Reform
- Process Law
- Current Problems in Administrative Law
- Penal Law and Criminology

## ECONOMICS

**Centre:** Faculty of Economic and Business Sciences

**Places available:** 35

**Web site:** [edoctorado.ucm.es/estudios/doctorado-economia](http://edoctorado.ucm.es/estudios/doctorado-economia)

**Lines of research:**

- Monetary and Fiscal Policy
- Financial Economics and International Finance
- Econometrics of Temporary Series and Panel Data
- Economic Growth and Cycles
- Prediction in Financial Markets
- Environmental Policies
- Methodology of Economics
- Economic Analysis of Discrimination and Equality Policies
- World Political Economics and International Economic Relations
- Economic Development
- Political Energy Economics
- Transnational Companies
- Economic Growth, Productivity Specialisation and Income Distribution
- European Economies

## ECONOMICS (Continued)

- Latin American Economies
- Financial Economics and International Finance
- Economic Evaluation of Public Policies; Income and Public Expenditure and Regulation
- Welfare Economy, Income Distribution and Poverty
- Public Administration
- Microeconomic Analysis of Tax Reforms
- Multi-jurisdictional Public Taxation
- Job Market Analysis
- Evaluation of Active and Passive Public Policies for the Job Market
- Education and Teaching Innovation in Economics
- Economics of Innovation and Technological Change
- Growth and Cycles: Technology Innovation, Energy and Emissions
- Economic Growth and Innovation
- Productivity, Innovation and Competition
- The Process of Adopting Innovation in Applied Economics
- Economics of Natural Resources
- Inequality, Human Capital and Living Standards in History
- History of Economic Crises
- Population and Farming Growth in Modern Spain
- History of the Financial System
- Historic Analysis of Direct Overseas Investment in Spain
- History of Business and Business Owners
- History of Economic and Business Thought
- Industrial Economics
- Telecommunications Economics
- Business Internationalisation
- Health Economics
- Game Theory

## ECONOMICS AND INNOVATION MANAGEMENT

**Centre:** Faculty of Economic and Business Sciences

**Joint:** Autonomous University of Madrid and Polytechnic University of Madrid

**Places available:** 3

**Web site:** [edoctorado.ucm.es/estudios/doctorado-economiaygestioninnovacion](http://edoctorado.ucm.es/estudios/doctorado-economiaygestioninnovacion)

**Lines of research:**

- Economics of Innovation and Internationalisation
- Innovation management and Innovation Policies

## EDUCATION

**Centre:** Faculty of Education - Teacher Training Centre

**Places available:** 40

**Web site:** [edoctorado.ucm.es/estudios/doctorado-educacion](http://edoctorado.ucm.es/estudios/doctorado-educacion)

**Lines of research:**

- Education and Modernity: Spaces, Times and Agents
- Interdisciplinary Line of Research on Attention for Educational Diversity and Inclusion (Cognitive Neuroscience, Learning, Psychopathology, Technologies and Curriculum)
- Research into Disciplinary Teaching
- Social Processes and Evaluation of Educational policies
- Inclusive, Intercultural and Permanent Education and Technology Development in the Information Society
- Diagnosis, Guidance and Evaluation in Education and Psychopedagogy (Educational Psychology)



## FEMINIST AND GENDER STUDIES

**Centre:** University Institute for Feminist Research

**Places available:** 10

**Web site:** [edoctorado.ucm.es/estudios/doctorado-estudiosfeministas](http://edoctorado.ucm.es/estudios/doctorado-estudiosfeministas)

**Lines of research:**

- Feminist Theories and Analysis of Social Gender Practices (TAP)
- Gender and Health
- Gender Equality in the Social Sciences

## QUANTITATIVE FINANCE AND ECONOMICS

**Centre:** Faculty of Economic and Business Sciences

**Joint:** University of Castile-La Mancha, University of the Basque Country/Euskal Herriko Unibertsitatea and Universitat de València (Estudi General)

**Places available:** 2

**Web site:** [edoctorado.ucm.es/estudios/doctorado-finanzasyeconomicacuanticuativa](http://edoctorado.ucm.es/estudios/doctorado-finanzasyeconomicacuanticuativa)

**Lines of research:**

- Bank and Finance
- Economic Policy and Public Policy Design and Evaluation
- International Economics
- Energy Markets
- Macroeconomics
- Quantitative Methods for Finance
- Industrial Organisation
- Game Theory
- Time Series Analysis

## GEOGRAPHY

**Centre:** Faculty of Geography and History

**Places available:** 25

**Web site:** [edoctorado.ucm.es/estudios/doctorado-geografia](http://edoctorado.ucm.es/estudios/doctorado-geografia)

## GEOGRAPHY (Continued)

**Lines of research:**

- Regional Geographic Analysis
- Physical Geography
- Human Geography

## ENVIRONMENT: HUMAN AND SOCIO-ECONOMIC DIMENSIONS

**Centre:** University Institute of Environmental Sciences

**Places available:** 10

**Web site:** [edoctorado.ucm.es/estudios/doctorado-medioambiente](http://edoctorado.ucm.es/estudios/doctorado-medioambiente)

**Lines of research:**

- Global Environmental Change and Society
- Institutions, Policies and Environmental Regulation

## JOURNALISM

**Centre:** Faculty of Information Sciences

**Places available:** 120

**Web site:** [edoctorado.ucm.es/estudios/doctorado-periodismo](http://edoctorado.ucm.es/estudios/doctorado-periodismo)

**Lines of research:**

- Narrative and Argumentation Structures of Journalism. Rhetoric and Argumentation
- Literature, Journalism and Communication Media
- Dissemination of Science and Culture
- History of Social Communication, Journalism, Advertising and Propaganda
- Information and Communication Law
- Geopolitics and International Relations
- Political Communication
- Public Opinion and Mass Culture
- Library Science, Sources and Documentation
- Communication: Gender and Social Movements
- Ethics and Deontology

## JOURNALISM (Continued)

- Information Theory: Language and Cognition
- Journalism Theory and New Professional Movements
- Linguistic Discourse Analysis. Semantics, Pragmatics and Sociolinguistics
- Creative Writing: The Artistic Discourse
- Semiotics and Discourse Analysis
- Information Society Analysis and Models
- Organisation and Management of the Communication Business
- Market Economics, Finance and Research
- Information and Communication Technology Applied to Journalistic Production and Cyberjournalism
- Editorial System: Agents, Text Editing and Forms of Publication
- Institutional Communication, Business Communication and Press Offices
- Audiovisual and Multimedia Journalism
- Community Media: Education and Culture
- Communication Structures and Development

## SOCIOLOGY AND ANTHROPOLOGY

**Centre:** Faculty of Political Sciences and Sociology

**Places available:** 45

**Web site:** [edotorado.ucm.es/estudios/doctorado-sociologiayantropologia](http://edotorado.ucm.es/estudios/doctorado-sociologiayantropologia)

**Lines of research:**

- Theories and Methodologies in Social Sciences. Knowledge, Culture and Communication
- Transformations in the Structures of Contemporary Society
- Social Psychology
- Sociology of Population and Territory
- International Migrations and Social Integration

## SOCIOLOGY AND ANTHROPOLOGY (Continued)

- Anthropological Perspectives on Diversity and on Social and Cultural Policy
- Ethnographies of Education, Health and Parentage: An Anthropological Perspective
- Citizenship and (In)equality in Contemporary Societies
- Work, Employment, Gender and Social Cohesion

## SOCIAL WORK

**Centre:** Faculty of Social Work

**Places available:** 20

**Web site:** [edotorado.ucm.es/estudios/doctorado-trabajosocial](http://edotorado.ucm.es/estudios/doctorado-trabajosocial)

**Lines of research:**

- Social Work and Psychosocial Intervention
- Social Services and Social Policy

## TOURISM

**Centre:** Faculty of Trade and Tourism

**Joint:** Antonio de Nebrija University, University of Alicante, University of Cádiz, University of Extremadura, University of La Laguna, University of Malaga, University of Santiago de Compostela, University of Seville, University of Vigo, King Juan Carlos University and Universitat Oberta de Catalunya (Open University of Catalonia)

**Places available:** 15

**Lines of research:**

- Planning and Managing Tourism Destinations, Tourism and the Local Community
- Economic Analysis of the Tourism Sector
- Management and Innovation in Tourism Organisations
- Tourism and Heritage
- Intelligence in the Tourism Sphere. ICT and Data Analysis

