Study in English at UC

Physics, Mathematics & Computer Science

The University of Cantabria offers a catalogue of courses taught in English that are integrated in different thematic programs. The courses are open to exchange students and it is possible to combine them with other regular courses in Spanish. For non-native students a B2 level of English is recommended.

Unit courses (6 ECTS)

Astronomy

G1776 - Spring

The course will cover the basics of the current knowledge in Astronomy. A global vision of our understanding of the Universe, the scales involved and the Forces driving its evolution will be given. Topics include the life of the stars or black hole Formation, among others. This will be complemented with the description of the main observational techniques and experimental evidences that lead to the current picture we have of the Universe.

Experimental Optics

G1778 - Spring

The course will teach mainly through experiments on some of the Fundamentals and techniques in optics. Experiments may include geometrical optics, photometry, dispersion, polarization, interference, diffraction, optical coherence and digital image processing. The student will learn how to use a variety of instruments, how to obtain and process the measurements and eventually, how to extract the information contained in the results.

Physics of Materials

G1779 - Spring

This course will help the student to know the physics models providing an understanding of the properties of materials in connection with their structure. The classification of the different materials according to their properties (optical, electrical, dielectric, and magnetic) will be described. The micro- and macroscopic technique most widely used in the Field are described, and some applied topics related with the properties of materials are specifically analysed for their implications in research and industry.

Particle Physics

G1777 - Spring

An overview of theoretical and experimental particle Physics will be given. The main experimental techniques, particle detectors and accelerators, will be reviewed. Examples of collider data-analysis and particle detection with solid state detectors will be treated in the lab. Basic concepts of QCD and weak interaction as gauge theories will be given, as well as an overview of the current problems of the Standard Model and the possible theories going beyond.

Advanced Experimental Techniques

G79 - Fall / G1775 - Spring

A First contact with advanced instrumentation and techniques is carried out through a set of experiments in different Fields of physics: optics and photonic, nuclear and particle physics and material science. These experiments are mostly performed in research labs, under supervision of an expert in each of the topics.

Advanced Computation

G80 - Fall

The course teaches how to use high level modelling tools to represent object oriented computing problems and organize the realization of a solution paying attention to the phases of the development processes available, the estimation of the computational complexity, and the resolution of the binary representation used. It is highly practice oriented and proposes a physics simulation problem to be solved with java. Finally the students will explore how to manage different volumes of information and automated forms to present resulting data.

Advanced Probability

G1894 - Fall

The learning outcomes for this subject include the acquired knowledge and management of advanced procedures in Probability Calculation with emphasis on limit theorems and some models of continuous time stochastic processes (martingales, Brownian motion and time series) with examples of their application.

Vice-rectorate for Internationalisation and Global Engagement
Avenida de los Castros s/n 39005 Santander (Spain)
http://web.unican.es/en/Studying/academic-offer/courses-taught-in-english

[+34] 942 20 10 18
exchange.students@unican.es

Study in English at UC

Physics, Mathematics & Computer Science

Advanced Statistics

G1903 - Spring

The students attending this course are expected to understand the importance of concepts such as the basic principles of Decision Theory, the Bootstrap and Bayesian Statistics. They will acquire some skills for handling these concepts. The students should also be able to perform simple simulations and understand the management of the most important descriptive multivariate techniques, including Discriminant Analysis, Cluster Analysis, Principal Components Analysis, Factorial Analysis and Multdimensional Scaling.

Measure Theory

G1902 - Spring

The basic theory of abstract integration will be developed in this course, both for positive measurable functions and with complex values. The basic theorems of convergence will be studied and compared with some related theorems already known by the student. Topics include the most common sigma-algebras and their completion, the relationship between positive linear functions and their representation as integrals, the relationships between measurable and continuous functions, and the general Lp spaces.

System and Network Security and Assurance

G1828 - Spring

Society today is increasingly dependant on information technology. Therefore the consequences of the failure of the IT infrastructure can be disastrous. For this reason, IT Engineers must know how to ensure as best they can the systems they manage. To reach this goal, they have to put great care in the deployment and exploitation of these systems.

Computer Animation and Video Games

G1749 - Spring

Fundamentals of design and creation of video games. The animation process step by step. Graphical techniques for game development. Organized in teams, students propose and implement a project demonstrating a novel technology for gaming.

Natural Language Processing

G687 - Spring

Distinguish between natural languages and artificial languages. Understand the complexity of human language. Become acquainted with linguistic terminology. Learn about algorithms, techniques and methods most currently used for automated processing of lexical, syntactic and semantic phenomena of human language. Assume that natural language processing cannot be automated completely, but satisfactory solutions can be reached in practical cases. Identify aspects of language on which we must work harder to obtain processing systems of the useful natural language. Reflect on the progress made in the field and mistakes over the past decades.

Courses in other disciplines

A complete list of courses taught in English can be found in the Following link: *http://web.unican.es/en/Studying/academic-offer/courses-taught-in-english*

Of special interest are the courses dealing with Spanish Language, History and Culture:

- Spanish History and Culture. G1806 - Spring
- Spanish Language. G1807 - Spring
- European Culture and Civilization. G1808 - Spring
- Cross-Cultural Spanish Arts. G1819 - Spring
- Prehistoric European Art. G1504 -Spring
- Contemporary Spain (1939-2009). Politics, Society and Culture. G1810 - Spring
- Discovering Spanish Landscapes. G1811 - Spring
- Playing with Words: The Spanish Literature in its Main Texts. G1812 - Spring

Vice-rectorate for Internationalisation and Global Engagement
Avenida de los Castros s/n 39005 Santander (Spain)
http://web.unican.es/en/Studying/academic-offer/courses-taught-in-english

[+34] 942 20 10 18
exchange.students@unican.es