

PROGRAMME INFORMATION



UNIVERSITY MASTER'S DEGREE IN **ADVANCED PHYSICS**

CÓDIGO 215801

UNED

Facultad
de Ciencias

**UNIVERSITY MASTER'S DEGREE
IN ADVANCED PHYSICS**

CÓDIGO 215801

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University Master's Degree in Advanced Physics

INFORMATION IDENTIFYING THE QUALIFICATION

Name and status of awarding institution

Universidad Nacional de Educación a Distancia.

Public university.

Name of qualification and title conferred in original language

Máster Universitario en Física Avanzada por la Universidad Nacional de Educación a Distancia.

Status

National validity.

Approved by Accord of the Council of Ministers on April 27th, 2021.

Main field(s) of study for the qualification

The study is included in the field of Sciences.

Language(s) of instruction/examination

The degree is taught in Spanish.

INFORMATION ON THE LEVEL OF THE QUALIFICATION

Level of qualification

Level 3 (Master) in the Spanish Framework of Higher Education (MECES) is equivalent to level 7 of European Qualification Framework (EQF).

Official length of programme

The official length of programme is 60 ECTS and 1 year full time.

Access requirements

Bachelor's Degree in Physics. Bachelor's Degree in Mathematics, Chemistry, Engineering and related with accredited training in physics studies.

INFORMATION ON THE CONTENTS

Mode of study

Blended learning full time.

Programme requirements

The programme of studies is composed of 12 compulsory ECTS, 36 elective ECTS and 12 Master's Dissertation ECTS.

Subjects

- Advanced Numerical Methods
- Complements of Mathematical Methods
- Statistical Mechanics of Complex Systems
- Compressible Fluid Dynamics
- Density Functional Theory
- Field Theory
- Information Theory
- Introduction to Data Science and Analytics
- Digital Image Processing
- Modeling and Simulation of Complex Systems
- Quantum Methods in Poliatomic Systems
- Instabilities and Turbulence
- Neural and Complex Networks
- Social Physics and Social Networks
- Relativistic Effects in Curved Space-Time
- Introduction to Quantum Information and Quantum Computing
- Out-of-Equilibrium Growth
- Transport Phenomena: Simulation Techniques for Fluids
- Microhydrodynamics
- Mechanical Properties of Soft Matter
- Final Project

Grading scheme

In the Spanish university system, modules/courses are graded on a scale of 0 to 10 points with the following qualitative equivalence:

0-4.9: "suspenso"; 5-6.9: "aprobado"; 7-8.9: "notable"; 9-10: "sobresaliente". A special mention, "Matrícula de Honor" may be granted to up to 5% of the students in a group provided they have got a "sobresaliente". To pass a module/course it is necessary to get at least 5 points.

In cases of recognition of ECTS, professional experience, cultural or sports activities, or student representation no grading will be recorded but, where appropriate, the word "Apto".

INFORMATION ON THE FUNCTION OF THE QUALIFICATION

Access to further study

This qualification gives access to Doctoral studies, provided that the student has completed a minimum of 300 ECTS in the overall teachings of Bachelor and Master.

Stated objectives associated with the qualification and professional status (if applicable)

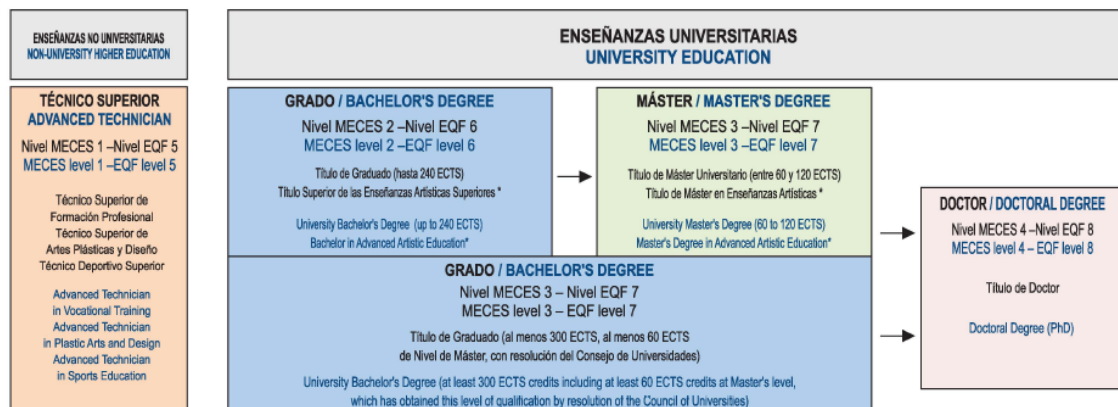
The objective of the Master's Degree in Advanced Physics is to expand the general studies of the Degree in Physics. It provides a deep knowledge in different areas of Physics, including fundamental theoretical aspects, computational and experimental methods and techniques, technological applications, etc. Mainly, the Master is focused on forming academic and research profiles. By taking this Master's Degree, the students will delve into areas of physics that are applicable to different fields of Science. They will also acquire the necessary skills to start a PhD, and to enter into the labor market in various areas: Physics, Mathematics, Biophysics, Physical Chemistry, Materials Engineering, Econophysics, Sociophysics, and so on.

Graduate students will know and understand the most relevant and current concepts of theoretical, computational and fluid physics. They will know how to deepen their understanding of cutting-edge theories in these fields, including their mathematical structure, their comparison with experimental results, and the description of the physical phenomena that these theories explain. They will acquire the ability to tackle and solve challenging problems in theoretical, computational or fluid physics, through the appropriate choice of the theoretical context, the identification of the relevant concepts and the use of the mathematical techniques that constitute the best approach to obtain the solution.

ADDITIONAL INFORMATION

www.uned.es/universidad/inicio.html

INFORMATION ON THE NATIONAL HIGHER EDUCATION SYSTEM



* Las enseñanzas Artísticas Superiores son Enseñanzas no Universitarias dentro del Sistema Educativo español de Enseñanza Superior

* Advanced Artistic Education is non-university education within the Spanish Higher Education System