

MSc In Data Science

Escuela Técnica Superior de Ingenieros Informáticos

Universidad Politécnica de Madrid



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MASTER'S DEGREE IN DATA SCIENCE

Who am I? Arminda Moreno, in charge of the academic aspects of this Master's Degree.

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Web page of the Programme:

<http://dia.fi.upm.es/mastercd/?q=en/presentation>

Access Moodle, UPM's learning platform, through:

<https://moodle.upm.es/titulaciones/oficiales/login/login.php>



- 1st Semester
 - The course Introduction to Research Methodology starts tomorrow, first edition.
 - 8 mandatory courses, 1 elective course.
 - The course Open Data and Knowledge Graphs will concentrate the teaching in the first 8 weeks.
- 2nd Semester, a prelude and 2 parts:
 - On the 31st of January, 1st and 3rd of February, 2022 the second edition of the course *Research Methodology* takes place.
 - 1st part of the 2nd Semester, starting the 7th of February to the 8th of April, 2022 involves elective courses and 2 mandatory courses.
 - 2nd part is devoted to the Master's Final Project.
 - The course Data Science Seminars runs throughout the whole 2nd Semester.



ACADEMIC CALENDAR 2021/2021

Calendar 2021-2022



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1ST SEMESTER TIMETABLE

Timetables 2021-2022



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MASTER'S IN DATA SCIENCE

The competencies of the MSc degree in Data Science have been structured into three categories.

- The **general competencies** are common to any Master degree in Spain – by Royal Decree –, or are proposed by the Universidad Politécnica de Madrid, or are included in the standard EURO-INF for Informatics Programmes.
- The **research orientation** competencies are proposed or shared by any research-oriented Master offered by the School of Computer Science, and that are different from those shared by the professionally-oriented Masters.
- The **specific competences** in Data Science that differentiate the proposed Master degree from other research Masters in the School of Computer Science.



- The Master's Degree brings together the teaching and research expertise in three Departments. It involves Full Professors and Tenured Associate Professors from the three of them:
 - Department of Computer Systems Architecture and Technology
 - Department of Artificial Intelligence
 - Department of Computer Languages and Systems and Software Engineering
- You can find information about the different Research Groups in these departments on the web page.



MASTER'S FINAL PROJECT

- Identify a topic of interest. Link this topic to one of the courses in the programme. Contact professors.
- Additionally, in December a list of proposals from Master's Professors will be published. You can select your 5 most preferred. They are very specific, focusing on projects each professor is involved in.



CONTENTS OVERVIEW

- Data science is inherently interdisciplinary.
- Data science must have a well-defined scope.

Data science, some definitions:

Data science involves data and, by extension, statistics, or the systematic study of the organization, properties, and analysis of data and its role in inference, including our confidence in the inference.

Data science is the study of the generalizable extraction of knowledge from data.

Data Science is the science of (collaboratively) generating, acquiring, managing, analyzing, carrying out inference, and reporting on data.



CONTENTS OVERVIEW

Courses are designed to cover the different stages of the Data Science Life Cycle:

- Application/Domain Level: referring to the specific application or domain of research.
- Infrastructure Level: computational skills and technologies.
- System level: Hardware and other technological structures including compute infrastructure, cloud computing systems, data structures, etc.
- Science of Data Science Level: including data science ethics; reproducibility; and policy and legal aspects.

Taken from: The Data Science Life Cycle: A Disciplined Approach to Advancing Data Science as a Science, by Victoria Stodden. Available online.

