

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>



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- 1st Semester
 - The course Introduction to Research Methodology starts today, 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:
 - From the 3rd to the 5th of February, 2021 the second edition of the course *Research Methodology* takes place.
 - 1st part starting the 8th of February to the 9th of April, 2021 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 2020/2021



E.T.S. DE INGENIEROS INFORMÁTICOS
Universidad Politécnica de Madrid

Academic Calendar. Master's in Data Science.

Academic Year 2020-2021

Classes start on

14th of September, 2020

Welcome session: to be determined

July 2020						
L	M	M	J	V	S	D
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

August 2020						
L	M	M	J	V	S	D
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

September 2020						
L	M	M	J	V	S	D
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

October 2020						
L	M	M	J	V	S	D
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

November 2020						
L	M	M	J	V	S	D
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

December 2020						
L	M	M	J	V	S	D
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

January 2021						
L	M	M	J	V	S	D
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

February 2021						
L	M	M	J	V	S	D
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28

March 2021						
L	M	M	J	V	S	D
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

April 2021						
L	M	M	J	V	S	D
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

May 2021						
L	M	M	J	V	S	D
				1	2	
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

June 2021						
L	M	M	J	V	S	D
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

July 2021						
L	M	M	J	V	S	D
		1	2	3	4	
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Key

Enrollment period

Master's student

From the 22nd of July to the 4th of August and

from the 14th of September to the 30th of September

Course withdrawal period (max 24 ECTS)

Bachelor's and Master's students

From the 3rd to the 9th of February, 2021

Enrollment extension period

Bachelor's and Master's students

From the 10th to the 16th of February, 2021

Lessons

Ordinary Exams

Extraordinary exams period

Holiday

No lessons

Compensation for holidays, change of schedule

Introduction to Research Methodology (course)

8th, 9th and 10th of September, from 5 pm to 8 pm.

3rd, 4th and 5th of February, from 5 pm to 9 pm.



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1ST SEMESTER TIMETABLE

First Semester						
	15:00 - 16:00	16:00 - 17:00	17:00 - 18:00	18:00 - 19:00	19:00 - 20:00	20:00 - 21:00
Monday		Data Processes		Big Data / Data Visualization		
Tuesday	Statistical Data Analysis		Intelligent Systems *		Open Data and Knowledge Graphs	
Wednesday	Cloud Computing and Big Data Ecosystems		Machine Learning			
Thursday	To be used sporadically in complementary / evaluation activities		To be used sporadically in complementary / evaluation activities		To be used sporadically in complementary / evaluation activities	
Friday	Open Data and Knowledge Graphs					
* Elective subject						
Research Methodology		8th, 9th, 10th of September 2020, 17:00-21:00				



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.

