

**Master Degree DATA SCIENCE DM 270/2004**  
**for students enrolled in a.y. 2021/2022**  
**Curriculum DATA SCIENCE - Study Plan Mathematics of Data Science**

| Exam number                                   | Mandatory attendance | Course unit  | Type of assessment | Course unit code | Modules                            | Year                               | Semester   | Credits    | Total hours | Lecture hours | Lecture credits | Exercitations hours | Exercitations credits | Laboratory hours | Laboratory credits | Type  | Scientific-Disciplinary Sector        |
|---|----------------------|--|--------------------|------------------|------------------------------------|------------------------------------|------------|------------|-------------|---------------|-----------------|---------------------|-----------------------|------------------|--------------------|---|---------------------------------------|
| <b>Curriculum Data Science</b>                |                      |  |                    |                  |                                    |                                    |            |            |             |               |                 |                     |                       |                  |                    |   |                                       |
| <b>Study plan Mathematics of Data Science</b> |                      |  |                    |                  |                                    |                                    |            |            |             |               |                 |                     |                       |                  |                    |   |                                       |
| 1   | No                   | Statistical Learning (C.I.)                            | mark               | SCP7079226       | Statistical Learning               | I                                  | 1 semester | 12         | 48          | 48            | 6               |                     |                       |                  |                    | Core courses  | Statistics                            |
|   | No                   | Fundamentals of Information Systems                    | mark               | SCP7078720       | Statistical Learning               | I                                  | 1 semester | 12         | 48          | 48            | 6               |                     |                       |                  |                    | Core courses  | Statistics                            |
|   | No                   | Stochastic Methods                                     | mark               | SCP7079197       |                                    | I                                  | 1 semester | 6          | 48          | 48            | 6               |                     |                       |                  |                    | Educational activities in elective or integrative disciplines | Computer science                      |
|   | No                   | High dimension probability for data science            | mark               | SCQ0093688       |                                    | I                                  | 1 semester | 6          | 48          | 48            | 6               |                     |                       |                  |                    | Educational activities in elective or integrative disciplines | Computer science                      |
| 3   | No                   | Machine and deep learning (C.I.)                       | mark               | SCQ0093685       | Machine and deep learning (Mod. A) | I                                  | 1 semester | 6          | 48          | 48            | 6               |                     |                       |                  |                    | Core courses  | Computer science                      |
|   | No                   |  |                    |                  |                                    | Machine and deep learning (Mod. B) | I          | 2 semester | 6           | 48            | 48              | 6                   |                       |                  |                    |   |                                       |
| 5   | No                   | Optimization for Data Science                          | mark               | SCP7079229       |                                    | I                                  | 2 semester | 6          | 48          | 48            | 6               |                     |                       |                  |                    | Core courses  | Operational Research                  |
| 6   | No                   | Mathematical models and numerical methods for big data | mark               | SCP7079406       |                                    | I                                  | 2 semester | 6          | 48          | 48            | 6               |                     |                       |                  |                    | Educational activities in elective or integrative disciplines | Operational Research                  |
| <b>Free credits</b>                           |                      |  |                    |                  |                                    |                                    |            |            |             |               |                 |                     |                       |                  |                    |   |                                       |
| <b>Optional exams of group 9*</b>             |                      |  |                    |                  |                                    |                                    |            |            |             |               |                 |                     |                       |                  |                    |   |                                       |
|   | No                   | High-dimensional probability for data science          | mark               | SCP7079297       |                                    | I                                  | 1 semester | 6          | 48          | 48            | 6               |                     |                       |                  |                    | Educational activities in elective or integrative disciplines | Computer science                      |
|   | No                   | Mathematical cell biology                              | mark               | SCQ0083722       |                                    | I                                  | 1 semester | 6          | 48          | 48            | 6               |                     |                       |                  |                    | Educational activities in elective or integrative disciplines | Computer science                      |
|   | No                   | Structural bioinformatics                              | mark               | SCP7079278       |                                    | I                                  | 2 semester | 6          | 48          | 48            | 6               |                     |                       |                  |                    | Educational activities in elective or integrative disciplines | Computer science                      |
| 9   | No                   | Financial Mathematics for Data Science                 | mark               | SCQ0093689       |                                    | I                                  | 2 semester | 6          | 48          | 48            | 6               |                     |                       |                  |                    | Educational activities in elective or integrative disciplines | Computer science                      |
| <b>Optional exams of group 10*</b>            |                      |  |                    |                  |                                    |                                    |            |            |             |               |                 |                     |                       |                  |                    |   |                                       |
|   | No                   | Human Data Analytics                                   | mark               | SCP7079397       |                                    | I                                  | 1 semester | 6          | 48          | 48            | 6               |                     |                       |                  |                    | Core courses  | Computer Science - Telecommunications |
|   | No                   | Game Theory  | mark               | SCP7079401       |                                    | I                                  | 1 semester | 6          | 48          | 48            | 6               |                     |                       |                  |                    | Core courses  | Computer Science - Telecommunications |
| 10  | No                   | Network science  | mark               | SCP8082723       |                                    | I                                  | 1 semester | 6          | 48          | 48            | 6               |                     |                       |                  |                    | Core courses  | Computer Science - Telecommunications |
| 7   | No                   | Statistical Methods for High Dimensional Data          | mark               | SCP9087018       |                                    | II                                 | 1 semester | 6          | 48          | 48            | 6               |                     |                       |                  |                    | Core courses  | Statistics                            |
| 8   | No                   | Cognitive, Behavioral and Social Data                  | mark               | SCP7079219       |                                    | II                                 | 1 semester | 6          | 32          | 32            | 4               |                     |                       |                  |                    | Core courses  | Psychology of Work and Organisations  |
|   |                      |  |                    |                  |                                    |                                    |            |            | 16          | 16            | 2               |                     |                       |                  |                    |   |                                       |
| 9   |                      | One course among exams of group 9                      |                    |                  |                                    | II                                 |            | 6          |             |               |                 |                     |                       |                  |                    | Educational activities in elective or integrative disciplines | Computer science                      |
| 10  |                      | One course among exams of group 10                     |                    |                  |                                    | II                                 |            | 6          |             |               |                 |                     |                       |                  |                    | Core courses  | Computer science                      |
| <b>Free credits</b>                           |                      |  |                    |                  |                                    |                                    |            |            |             |               |                 |                     |                       |                  |                    |   |                                       |
| 11  |                      | Free credits   |                    |                  |                                    | II                                 | 1 semester | 6          |             |               |                 |                     |                       |                  |                    |   | Free credits                          |
|   |                      | Internship   | evaluation         | SCP7079232       |                                    | II                                 |            | 15         |             |               |                 |                     |                       |                  |                    | D   | Other activities                      |
|   |                      | Final examination                                      |                    | SCP7079319       |                                    | II                                 |            | 15         |             |               |                 |                     |                       |                  |                    | C   | Language/Final exam                   |

| KEY |                                       |
|-----|---------------------------------------|
|     | courses offered in the a.y. 2021/2022 |
|     | courses offered in the a.y. 2022/2023 |

| Type |                     |
|------|---------------------|
| C    | Language/Final exam |
| D    | Other activities    |

\* This course can be either taken at the first or at the second year