# Syllabus

## *Syllabus*

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| **Titul dl curs** | Codeless Machine Learning in KNIME |
| **Codesc dl curs** | 71078 |
| **Titul suplementar** | |
| **SSD** | IINF-05/A |
| **Lingaz** | Inglese |
| **Curs de laurea** | Corso di Dottorato di ricerca in Scienze e Tecnologie informatiche |
| **D'autri cursc de laurea (cursc deberieda)** | |
| **Dozenc** | prof. Giuseppe Di Fatta,<br>Giuseppe.DiFatta@unibz.it<br>https://www.unibz.it/en/faculties/engineering/academic-staff/person/46582 |
| **Assistent didatich** | |
| **Semester** | Secondo semestre |
| **Ann/Agn de stude** | 2025 - 2026 |
| **Credic universitars** | 3 |
| **Ores de ensegnament** | 30 |
| **Ores de laboratore** | 0 |
| **Ores de stude individual** | 45 |
| **Ores de receviment prevedudes** | - |
| **Ressumé di contegnus** | KNIME Analytics Platform is a widely used, free and open-source software for Data Science and Machine Learning. It can be used to create visual workflows for data processing and model building for descriptive and predictive Machine Learning methods. This platform is particularly popular and valued for its user-friendly interface and its openness, particularly to other external tools (e.g., JDBC drivers, MS Power BI, AWS, Tableau), programming languages (e.g., Java, Python, R) and popular Machine Learning libraries (e.g., H2O, Weka, Keras, Tensorflow).<br>The course introduces the platform, its user interface, and its rich |

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| | repository of data manipulation methods and machine learning algorithms. It also covers KNIME's advanced features that allow implementing more complex workflows in a similar way to programming languages but in a completely visual fashion and without writing code. Examples and exercises will be carried out using datasets from real-world applications. By passing the final tests students are also awarded with KNIME Certifications on Data Science. |
| **Argomenc dl curs** | 1.Introduction to "KNIME Analytics Platform"<br>2.Overview of methods for data manipulation<br>3.Main methods for data transformation and crosstabulation<br>4.Main methods for data visualization<br>5.Introduction to basic Machine Learning concepts and methods<br>6.Introduction to main algorithms for Regression<br>7.Introduction to main algorithms for Clustering<br>8.Introduction to main algorithms for Classification<br>9.Design of KNIME workflows for Machine Learning<br>10.Codeless and advanced techniques in KNIME for programmability<br>11.Codeless and advanced techniques in KNIME for modularity<br>12.Codeless and advanced techniques in KNIME for abstraction<br>13.Integration of external tools and programming languages into KNIME<br>14.Configuration of libraries for Deep Learning in KNIME<br>15.Design of data workflow with the use of libraries for Deep Learning in KNIME |
| **Paroles clef** | Machine Learning, Data Science, KNIME |
| **Prerecuisic aconsiés** | |
| **Cursc propedeutics** | |
| **Modalité de ensegnament** | Lectures, practical exercises |
| **Oblianza de frecuenza** | Attendance is compulsory |
| **Obietifs formatifs y competenzes da arjonje** | Knowledge and understanding:<br>• D1.1 - Knowledge of the key concepts and technologies of data science disciplines<br>• D1.2 - Understanding of the skills, tools and techniques required for an effective use of data science<br>• D1.11 - Knowledge of the main machine learning algorithms for data analysis |

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| | Applying knowledge and understanding:<br>• D2.2 - Ability to address and solve a problem using scientific methods<br>• D2.4 - Ability to develop programmes and use tools for the analysis of data<br>Making judgments<br>• D3.2 - Ability to autonomously select the documentation (in the form of books, web, magazines, etc.) needed to keep up to date in a given sector<br>Communication skills<br>• D4.1 - Ability to use English at an advanced level with particular reference to disciplinary terminology.<br>Learning skills<br>• D5.3 - Ability to deal with problems in a systematic and creative way and to appropriate problem-solving techniques. |
| **Obietifs formatifs y competenzes da arjonje (informazions suplementares)** | |
| **Sort de ejam** | - Individual weekly assignments (70%)<br>- a 30-minute multiple-choice test (10%)<br>- a 45-minute multiple-choice test (20%)<br>The two multiple-choice tests are also valid for the KNIME Certification Program for the L1 and L2 Certification in Data Science:<br>- L1: Basic Proficiency in KNIME Analytics Platform<br>- L2: Advanced Proficiency in KNIME Analytics Platform<br>Note: non-attending students will be able to submit their assignment work online. |
| **Criters de valutazion** | The student's grade is calculated based on the weighted average grade from the course assignments and the tests. |
| **Bibliografia obligatora** | |
| **Bibliografia aconsieda** | |
| **Deplù informazions** | KNIME Analytics Platform<br>https://www.knime.com/ |
| **OSS** | Istruzione di qualità |