Syllabus

Descrizione corso

Titolo insegnamento	Codeless Machine Learning in KNIME
Codice insegnamento	71078
Titolo aggiuntivo	
Settore Scientifico-Disciplinare	IINF-05/A
Lingua	Inglese
Corso di Studio	Corso di Dottorato di ricerca in Scienze e Tecnologie informatiche
Altri Corsi di Studio (mutuati)	
Docenti	prof. Giuseppe Di Fatta, Giuseppe.DiFatta@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/46582
Assistente	
Semestre	Secondo semestre
Anno/i di corso	2025 - 2026
CFU	3
Ore didattica frontale	30
Ore di laboratorio	0
Ore di studio individuale	45
Ore di ricevimento previste	-
Sintesi contenuti	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). The course introduces the platform, its user interface, and its rich

	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.
Argomenti dell'insegnamento	1.Introduction to "KNIME Analytics Platform" 2.Overview of methods for data manipulation 3.Main methods for data transformation and crosstabulation 4.Main methods for data visualization 5.Introduction to basic Machine Learning concepts and methods 6.Introduction to main algorithms for Regression 7.Introduction to main algorithms for Clustering 8.Introduction to main algorithms for Classification 9.Design of KNIME workflows for Machine Learning 10.Codeless and advanced techniques in KNIME for programmability 11.Codeless and advanced techniques in KNIME for modularity 12.Codeless and advanced techniques in KNIME for abstraction 13.Integration of external tools and programming languages into KNIME 14.Configuration of libraries for Deep Learning in KNIME 15.Design of data workflow with the use of libraries for Deep Learning in KNIME
Parole chiave	Machine Learning, Data Science, KNIME
Prerequisiti	
Insegnamenti propedeutici	
Modalità di insegnamento	Lectures, practical exercises
Obbligo di frequenza	Attendance is compulsory
Obiettivi formativi specifici e risultati di apprendimento attesi	Knowledge and understanding: • D1.1 - Knowledge of the key concepts and technologies of data science disciplines • D1.2 - Understanding of the skills, tools and techniques required for an effective use of data science • D1.11 - Knowledge of the main machine learning algorithms for data analysis

	Applying knowledge and understanding: • D2.2 - Ability to address and solve a problem using scientific methods • D2.4 - Ability to develop programmes and use tools for the analysis of data Making judgments • 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 Communication skills • D4.1 - Ability to use English at an advanced level with particular reference to disciplinary terminology. Learning skills • D5.3 - Ability to deal with problems in a systematic and creative way and to appropriate problem-solving techniques.
Obiettivi formativi specifici e risultati di apprendimento attesi (ulteriori info.)	
Modalità di esame	- Individual weekly assignments (70%) - a 30-minute multiple-choice test (10%) - a 45-minute multiple-choice test (20%) The two multiple-choice tests are also valid for the KNIME Certification Program for the L1 and L2 Certification in Data Science: - L1: Basic Proficiency in KNIME Analytics Platform - L2: Advanced Proficiency in KNIME Analytics Platform Note: non-attending students will be able to submit their assignment work online.
Criteri di valutazione	The student's grade is calculated based on the weighted average grade from the course assignments and the tests.
Bibliografia obbligatoria	
Bibliografia facoltativa	
Altre informazioni	KNIME Analytics Platform https://www.knime.com/
Obiettivi di Sviluppo Sostenibile (SDGs)	Istruzione di qualità