Introduction

This three-day training offers an introduction to the KNIME® Data Exploration environment. No prior programming experience or knowledge of KNIME® is required. The topics covered throughout the course are getting to grips with the KNIME® tool, data exploration and visualization, as well as programming through node diagrams and data flows.

Who is this training for?

This training is aimed at scientists who wish to acquire a solid knowledge of the KNIME® environment and to get started with Data Exploration techniques.

You will learn to…

- Master the basics of KNIME®, the tool of choice for data exploration in multiple domains.
- Read, merge, manipulate, convert, highlight, visualize and save your scientific data with an open, powerful and versatile tool.

What are the prerequisites?

- Have prior experience using scientific software.
- Know the basics of Excel® software or equivalent.
- Understand basic computer English (the tool is in English).

Methods, modalities, access times and adaptation for people with disabilities

This training is entirely based on the KNIME educational software with the implementation of workflows as a learning method. A continuous evaluation by MCQ is carried out on the exercises proposed during the training, and hot and cold satisfaction questionnaires are offered to trainees. The training is offered only face-to-face, in-house. Adaptation of the time and mode of training for people with disabilities in coordination with the company. Maximum access time of two months between the order and the start of the training.

Full programme

First day

Introduction

- How to install the KNIME® data exploration environment.
- Data exploration and analysis through node diagrams in KNIME®.
- Getting familiar with the KNIME® work area and its components.

My first data diagram

- Creating, saving and deleting a diagram.
- Manipulating a node: creation, configuration, execution and naming of a node.
- Describing a node and viewing the associated data.
- Data structure in KNIME®: organization of data in each node in the form of a table with rows and columns.
- How to filter columns in a node's table.
- How to filter rows in a node's table.
- Practical application.

My first data exploration

- Introduction to data exploration.
- Replacing values in a column.
- Splitting a column with text-type data.
- Data types in KNIME® and type conversion.
- Data visualization: highlighting, scatter plot, dot matrix, interactive table, line graph, interval graph, histogram, parallel coordinates.
- Practical application.

Second day

Practical application on experimental data using the KNIME knowledge acquired during the first day of training

- Reading and writing heterogeneous experimental data from several files in CSV and/or Excel format using the nodes -File Reader-, -Excel Reader-, -CSV Writer- and -Excel Writer-.
- Standardization of experimental data column names using the nodes -Column Rename- and -Column Rename (regex)-.
- Filtering of experimental data using the nodes -Row Splitter-, -Column Splitter-,
- Rule Engine- and -Rule Base Splitter-.
- Transformation of experimental data using the nodes -Cell Splitter by Position-,
- Cell Splitter by [Delimiter]-, -String Manipulation- and -String to Date & Time-.
- Visualization and highlighting of transformed data using the nodes -Color Manager-
- Scatter Plot-, -Scatter Matrix-, -Histogram-, -Pie Chart-, -Radar Plot-,
- Parallel Coordinates- and -Interactive Table-.

Continuing data exploration and discovering new functionalities

- Transposing tables.
- Grouping and ungrouping data.
- Pivoting and unpivoting data.
- Concatenation and Joining of tables.
- Practical application.

Third day

Practical application on experimental data using the KNIME knowledge acquired during the second day of training

- Grouping transformed data in order to calculate statistical results on the nature of the data.
- Transposition, pivoting and unpivoting of data in order to transform the organization of data for a better understanding and reading of statistical results.
- Joining statistical results on different data for analysis and comparison.

A first data analysis

- Introduction to data analysis.
- Separating and mixing data: separation by row, partitioning, shuffling and concatenation.- Transforming columns: Managing missing values, data normalization.
- My first data model: learning and prediction of data through the practical application of a classification model.- Saving and reading a data model from a file.
- Practical application.

Practical application on experimental data using the KNIME knowledge acquired during the third day of training

- Implementation of a first classification model on the previously transformed data with evaluation using statistical estimators and visualization of the results.