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Course: Omics Project: Integromics — credits: 10

Course code	BFVM23PRJOMICS
Name	Omics Project: Integromics
Study year	2026-2027
ECTS credits	10
Language	English
Coordinator	F. Feenstra
Modes of delivery	Project-based learning
Assessments	Omics Project: Integromics 1 - Other assessment

Learning outcomes

1. Formulate a clear, verifiable hypothesis on the basis of a client’s research question; identify and understand possible Omics techniques necessary for answering a research question and hypothesis.
1. Evaluate datasets for utility in answering a client’s hypothesis.
1. Pre-process datasets in order to be able to do inter-dataset analysis.
1. Apply and validate data science techniques in pre-processing data and meta-analysis across datasets.
1. Identify business and economics factors applicable to the research question and integrate them with the final conclusion (where applicable).
1. Present findings in a clear and scientific manner to the target audience (client, researchers, peers).

Content

This course introduces the integration of various "omics" techniques that are used to address research questions that cannot be answered by a single analysis. These techniques are both quantitative and high throughput, generating large datasets that can be analysed using advanced statistical and machine learning methods. The course begins by introducing state-of-the-art lab techniques in areas such as (meta)genomics, transcriptomics, metabolomics, proteomics, epigenomics, foodomics, imaging, and epidemiology. You will have the opportunity to select a research project from partner research centres such as UMCG, AVEBE, KCBBE, and the Digital Society Hub that provide multiple datasets, and formulate and test hypotheses using appropriate data science techniques (Statistcs/Machine Learnng/Artificial Intelligence). A key aspect of this course is effectively communicating the methods and findings to peers and clients.
This course builds upon the technologies mastered in the first research project, and when appropriate, visualizations and web techniques from the first project will be utilized to report and clarify findings.

Included in programme(s)

Master Data Sciences for the Life Science

School(s)

Engineering, Life Sciences & ICT

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