## Programme

**Qualification awarded**
Bachelor of Science

**Length of the programme**
48 months

**ECTS credits**
240

**Level of qualification**
Bachelor

**Mode**
-

**Language**
Dutch, with parts in English

**School**
Institute for Life Science & Technology

# Bio-Informatics

**Profile of the programme**

*No content available*

**Learning outcomes**

Graduates in Bio-informatics are employed as a researcher, developer or scientific programmer to conduct research or software development in the biological and biomedical field. Graduates are analyzing large data sets from high-throughput laboratory research in scientific institutions and in companies in the pharmaceutical, biotechnology, food and plant-breeding industries.

Graduates of the Bachelor of Bioinformatics programme can demonstrate that s/he has achieved the ability to:

Perform research in the Bioinformatics domain which either helps to solve a problem or develop a method, or provides a greater understanding of a subject within his specific working environment, by:

- Translating the research question to a research plan, taking into account the state of the art in the literature, quality and safety aspects, technological possibilities, health, the environment, sustainability and ethics;
- conducting research based on the scientific method;
- implementing software developments through the 'agile' process;
- reporting and presenting research in accordance with the work field standards.

Conduct experiments in the Bioinformatics domain in a way that ensures that demonstrably reliable results are obtained, by:

- Designing, conducting and documenting an experiment, as well as processing and evaluating its outcomes (including statistically);
- designing, implementing and documenting bioinformatics software, selecting an appropriate programming language and verifying the reliability of the software.

Develops, implements and maintains a management system or parts thereof to ensure that the system conforms to the relevant legislation and quality standards and the organization’s norms and values.

- Designing, implementing and maintaining a database or other system for biomedical data, with reference to the FAIR principles;
- Managing code in a version management system, documenting it in accordance with the applicable norms and providing access to it based on the FAIR guidelines for third-party use;
- Designing and maintaining a Linux-based computer system appropriate for bioinformatics work to be conducted efficiently.

Provide properly substantiated advice on the design, improvement or use of products, processes and methods and effects profitable transactions involving products or services within the Bioinformatics domain, by

- Advising a client on the approach to bioinformatics research and software development.

The graduate demonstrates various generic competences by:

- taking initiatives to contact colleagues in order to exchange information and communicate conclusions to different levels in the organisation;
- contributing to the guidance and/or development of colleagues;
- showing professional attitude by being a motivated, flexible and valuable colleague;
- interpreting professional and ethical dilemmas and making decisions accordingly;
- critically evaluating own points of view and actions and taking responsibility for them;
- improving his own performance by self-reflection and receiving feedback.

# Programme

| **Bio-Informatics** | **credits** |
|---|---|
| | 60 |
| Theme 1 - Order in Chaos | *15* |
| BFVP22BIOINFORM - The Bioinformatician | *5* |
| BFVP23DNA - From DNA to Protein | *5* |
| BFVP22MOLBIOCODE - Molecular Biology in Code | *5* |

- Theme 2 - Energy management of the cell *15*
  - BFVP22GENEN - Between Genes and Healing *5*
  - BFVP22BIOCHEMIE - Biochemistry in Focus *10*
- Theme 3 - DNA the hard disk of the cell *15*
  - BFVP22SURVIVAL - Survival of the Fittest *5*
  - BFVP22TOOLBOX - The Bioinformatics Toolbox *10*
- Theme 4 - Measuring is Knowing *10*
  - BFVP22CYCLUS - The Scientific Cycle *10*
- Electives *5*

Year 2 60

- Theme 5 - Genomics practice *15*
  - BFVH23NGS - NGS & Mapping & Genetics *5*
  - BFVH23GENOMICS - Genomics & Transcriptomics *10*
- Theme 6 - BLAST basics *15*
  - BFVH23DATADASH - Data Dashboards *10*
  - BFVH23IMMUNO - Immunology *5*
- Theme 7 - Gene Expression Analysis *15*
  - BFVH23METAGEN - Metagenomics *10*
  - BFVH23MACHINE - Machine Learning with Class(es) *5*
- Theme 8 - Introduction to Systems Biology *15*
  - BFVH23OMICS - Omics *10*
- Electives *5*

Year 3 60

- Theme 9 - Introduction Machine Learning *15*
  - BFVH3TH9 - Laboratory theme 9 *6*
  - BFVH3JAVA - Introduction Java *3*
  - BFVH18IDMN - Introduction to Datamining *3*
  - BFVH19BIN3 - Bio-informatics 3 *3*
- Theme 10 - Research web applications *15*
  - BFVH3TH10 - Laboratory theme 10 *5*
  - BFVH18GEN2 - Genetics 2 *3*
  - BFVH4STA4 - Statistics 4 *3*
  - BFVH4WBI1 - Web Based Information Systems *3*
  - LSVH7STB3A - Academic Counselling Year 3 - Part 1 *1*
- Electives *30*

Year 4 60

- Practical placement *30*
  - BFVH19STAGE - Practical Learning Period *28*
  - BFVH20DSQC - Data Stewardship & Quality Control *2*
- Final Project *30*
  - BFVH15AFST - Final Project *30*

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