Hanze

Programme

Qualification awarded
Master of Science

Length of the programme
24 months

ECTS credits
120

Level of qualification
Master

Mode
Full-time

Language
English

School
Engineering, Life Sciences & ICT

Locations
Groningen

Master Data Sciences for the Life Science

Profile of the programme

Graduates in Data Science for Life Sciences are employed within a wide range of branches that can be clustered in scientific research, industry and policymaking. A data scientist in life sciences works in a self-directed and autonomous manner on complex problems, integrating data from different areas within the scope of the life sciences. As such, the data scientist in life sciences is skilled in methods for data handling and analysis, but also in data stewardship and effective communication, especially in a multidisciplinary setting.
The graduate of the Master of Data Science for Life Sciences program can demonstrate that s/he has achieved the ability to:

Conduct critical and creative research (CR)
The graduate can formulate a testable hypothesis relevant to a client's question. The graduate can assess existing methods and solutions to similar problems and critically evaluate their applicability in the present context. The graduate can choose appropriate data research methods and motivate this choice or adapt such methods creatively to obtain original solutions for the problem at hand. Once implemented, the graduate critically evaluates the obtained solution, considering the best practices in the field, and iterates to converge to an optimal solution.

The graduate can generalize these methods to apply them in neighboring fields or related problems in new environments.

Model meaningful information (MM)
The graduate applies appropriate mathematical, statistical and machine learning techniques to identify patterns, causal relations, and actionable knowledge, and to make predictions. The graduate demonstrates the ability to integrate knowledge, handle complexity and to extract meaningful information from (incomplete) data.

Deliver organized solutions (DO)
The graduate retrieves multilevel data from multiple sources and can organize, combine, clean, process and store these reliably, adhering to the FAIR principles (Findable, Accessible, Interoperable and Re-usable). Written code is organized, well written, well documented, traceable via version control management systems, and suitably licensed.

Communicate Effectively (CE)
The graduate communicates actively and effectively about his/her work with experts, peers and laymen in writing, orally and in visual form. In particular, the graduate can effectively phrase the research question or problem, explain and justify the methods and/or approach proposed or taken, and present the results in a clear manner, together with a critical, reflective interpretation.

Being responsible (BR)
The graduate is aware of work-related ethical and legal aspects and takes responsibility to act per applicable laws and best practices, in particular pertaining to privacy issues, integrity and security. In addition, the graduate is aware of the professional responsibility within society and, where possible, adheres to the FAIR (Findable, Accessible, Interoperable, and Reusable) principles for scientific data management and stewardship.

Being entrepreneurial (BE)
The graduate demonstrates awareness of and focus on broader and/or commercial application of research outcomes. The graduate can formulate business ideas and can bind stakeholders. The graduate is a self-directed and autonomous professional that feels responsible to act in the face of challenges.

Learning outcomes

Graduates in Data Science for Life Sciences are employed within a wide range of branches that can be clustered in scientific research, industry and policymaking. A data scientist in life sciences works in a self-directed and autonomous manner on complex problems, integrating data from different areas within the scope of the life sciences. As such, the data scientist in life sciences is skilled in methods for data handling and analysis, but also in data stewardship and effective communication, especially in a multidisciplinary setting.
The graduate of the Master of Data Science for Life Sciences program can demonstrate that s/he has achieved the ability to:
<u>Conduct critical and creative research (CR)</u>
The graduate can formulate a testable hypothesis relevant to a client's question. The graduate can assess existing methods and solutions to similar problems and critically evaluate their applicability in the present context. The graduate can choose appropriate data research methods and motivate this choice or adapt such methods creatively to obtain original solutions for the problem at hand. Once implemented, the graduate critically evaluates the obtained solution, considering the best practices in the field, and iterates to converge to an optimal solution.

The graduate can generalize these methods to apply them in neighboring fields or related problems in new environments.

<u>Model meaningful information (MM)</u>
The graduate applies appropriate mathematical, statistical and machine learning techniques to identify patterns, causal relations, and actionable knowledge, and to make predictions. The graduate demonstrates the ability to integrate knowledge, handle complexity and to extract meaningful information from (incomplete) data.

<u>Deliver organized solutions (DO)</u>
The graduate retrieves multilevel data from multiple sources and can organize, combine, clean, process and store these reliably, adhering to the FAIR principles (Findable, Accessible, Interoperable and Re-usable). Written code is organized, well written, well documented, traceable via version control management systems, and suitably licensed.

<u>Communicate Effectively (CE)</u>
The graduate communicates actively and effectively about his/her work with experts, peers and laymen in writing, orally and in visual form. In particular, the graduate can effectively phrase the research question or problem, explain and justify the methods and/or approach proposed or taken, and present the results in a clear manner, together with a critical, reflective interpretation.

<u>Being responsible (BR)</u>
The graduate is aware of work-related ethical and legal aspects and takes responsibility to act per applicable laws and best practices, in particular pertaining to privacy issues, integrity and security. In addition, the graduate is aware of the professional responsibility within society and, where possible, adheres to the FAIR (Findable, Accessible, Interoperable, and Reusable) principles for scientific data management and stewardship.

<u>Being entrepreneurial (BE)</u>
The graduate demonstrates awareness of and focus on broader and/or commercial application of research outcomes. The graduate can formulate business ideas and can bind stakeholders. The graduate is a self-directed and autonomous professional that feels responsible to act in the face of challenges.
</body>
</html>

Programme

Master Data Sciences for the Life Science	**credits**
Semester 1	30
Semester 1 Required Optional Subjects	*10*
selection of following courses	
BFVM23PREPDATSC1 - Preparatory Course Datascience 1	*5*
BFVM23PREPPROGR1 - Preparatory Course Programming 1	*5*
BFVM23PREPOMICS - Preparatory Course Omics 1	*5*
Semester 1 Required Subjects	*20*
BFVM23DATASCNC2 - Data Science 2	*5*
BFVM23PROGRAM2 - Programming 2	*5*
BFVM25RPS - Research & Professional Skills	*10*
Semester 2	30
Semester 2 Required Subjects	*25*
BFVM23DATASCNC3 - Data Science 3	*5*
BFVM23PROGRAM3 - Programming 3	*5*
BFVM23DSPH - Data Science for Personal Health	*10*
BFVM23DATASCNC4 - Data Science 4	*5*
Semester 2 Required Optional Subjects	*5*
selection of following courses	
BFVM24PROGRAM4OO - Programming 4 Elective OO	*5*
BFVM24PROGRAM4R - Programming 4 Elective R	*5*
Semester 3	30
BFVM25DATASCNC5 - Data Science 5	*5*
BFVM25PROGRAM5 - Programming 5	*5*
BFVM23PRJOMICS - Omics Project: Integromics	*10*
BFVM25DATASCNC6 - Data Science 6	*5*
BFVM25PROGRAM6 - Programming 6	*5*
Graduation	30
BFVM23GRADUATION - Graduation Project	*30*

Although every effort has been taken to ensure the accuracy of the information in the ECTS Course Catalogue, we cannot guarantee that the content and the information contained in it is always up-to-date, complete or true. Accordingly, no rights can be derived from the contents of the catalogue.