


In view of the health context linked to the spread of the coronavirus, the methods of organisation and evaluation of the learning units could be adapted in different situations; these possible new methods have been - or will be - communicated by the teachers to the students.

3 credits	15.0 h + 20.0 h	Q2
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Teacher(s)	Gatto Laurent ;
Language :	French
Place of the course	Bruxelles Woluwe
Prerequisites	<i>The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.</i>
Main themes	This introduction to bioinformatics and data science applied to biomedical sciences will introduce students methodologies and technologies used in bioinformatics. They will learn how to manage bioinformatics projects and how to manipulate and visualise data of average size.
Aims	<p>After this course, the students will understand what bioinformatics is and when to use it. They will be able to</p> <ul style="list-style-type: none"> • Analyse a simple bioinformatics problem, and implement a bioinformatics solution to solve it. • Decompose a problem in simpler sub-problems and solve these as analysis scripts. <p>1</p> <ul style="list-style-type: none"> • Read and understand existing scripts. • Use informatics tools to help and support their programming tasks. • Understand technical documentation for the R programming language and Bioconductor vignettes. • Write their own R scripts and small analysis reports in Rmd. <p>This course contributes to the learning goals 2a, 2c, 3c, 5a, 5b, 5c, 5d of the bachelor's programme in biomedical sciences.</p> <p>-----</p> <p><i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i></p>
Evaluation methods	<p>Due to the COVID-19 crisis, the information in this section is particularly likely to change.</p> <p>The course evaluation will be practical and computer-based; the students will prepare a reproducible report in Rmd using RStudio answering to the exam questions addressing small scale data analysis task similar to those presented during the course.</p>
Teaching methods	<p>Due to the COVID-19 crisis, the information in this section is particularly likely to change.</p> <p>The course will be composed of practical sessions, during which the students will implement solutions to data analysis problems relevant to biomedical sciences using the R programming language and the RStudio development environment.</p> <p>Course attendance to all sessions (volume 1 and 2) is mandatory. In case of repeated unjustified absence, further attendance to the final exams might be excluded.</p>
Content	<p>This introductory course to bioinformatics will focus on the following themes:</p> <ul style="list-style-type: none"> • What is bioinformatics and its application domains. • Technologies and methodologies used in bioinformatics. • Introduction to omics data and technologies. <p>The data science applications to biomedical sciences will focus on:</p> <ul style="list-style-type: none"> • Data analysis project management and reproducible research. • Spreadsheets for data organisation. • The RStudio programming environment. • Data analysis and programming in R. • Introduction to data structures in R. • Data handling and visualisation. • High throughput data with R and Bioconductor.

Inline resources	The course material is available online: https://uclouvain-cbio.github.io/WSBIM1207/
Faculty or entity in charge	SBIM

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Aims
Additionnal module in Biomedical Sciences	WSBIM100P	3		
Bachelor in Biomedicine	SBIM1BA	3	WSBIM1001	