UCLouvain

lbbmc2203

2018

5 credits	40.0 h + 40.0 h	Q1 and Q2

Teacher(s)	Alsteens David ;Batoko Henri ;Chaumont François ;Debier Cathy ;Donnay Isabelle ;Dufrêne Yves ;Dumont Patrick ;Ghislain Michel ;Gofflot Françoise ;Hachez Charles ;Hallet Bernard ;Hols Pascal ;Knoops Bernard ;Larondelle Yvan ;Mahillon Jacques ;Morsomme Pierre ;Rees Jean-François ;Rezsohazy René ;Soumillion Patrice coordinator ;
Language :	French
Place of the course	Louvain-la-Neuve
Main themes	A) This teaching unit aims at providing the student with the skills required to think through and write a successful research project equivalent to a 4-year "doctorate" research project. All the important aspects of a good research project should be addressed: i) and up-to-date and adequate state of the art, the interest and objectives of the project, the scientific strategy to achieve the goals of the project , a detailed methodology, a work plan and calendar, all these presented in a synthetic but comprehensive style. B) Alternatively, this teaching unit may involve instead a participation to the iGEM International Synthetic Biology Competition, provided a team of students undertakes to do so. In this case, the teamwork will include the construction of a research project in the field of synthetic biology, its realization in the laboratory, the presentation of the results during the final phase of the competition, but also the search for subsidies to finance the activity and an important work of promotion and communication.
Aims	1 A) Each student will learn how to build a research project. He/she will develop a critical, analytical and synthetic mind in relation to the scientific literature. Using his/her background knowledge, he/she should come up with a creative, insightful, original and interesting project. He/she will develop a capacity for elaborating convincing scientific argumentation while remaining realistic, and a capacity for structuring his/her thoughts to propose a detailed methodological plan, timely organized in a logical and rigorous way. Finally, he/she will learn to write synthetically and construct relevant figures, complying with imposed rules and caring to produce tidy documents. B) Overall, the same learning outcomes as those outlined above will be aimed at if the student chooses to participate instead to the iGEM synthetic biology competition. In which case the student will also gain in-depth knowledge of practical molecular biology techniques; he/she will learn how to work and organize as a team, and develop skills required for promoting a research project and looking for the necessary funds through sponsoring. - - - - *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".*
Content	A) An introductory seminar presenting the activity and the guidelines will be organized at the beginning of the activity. After identifying their topic within a thematic developed at the ISV (Institut des Sciences de la Vie), each student will have to do a literature search (state of the art), formulate the objectives and the dedicated scientific strategy, describe the appropriate methodology and the interest of the proposed research, and highlight its innovative character. A chosen Professor whose research interest is related to the project will act as an advisor and supervise the work. In addition, a coaching committee will evaluate the progress of the work on a regular basis. The committee will notably validate the literature overview, guide the student about presenting adequately the scientific question, formulating the objectives, designing the strategy and developing a detailed and relevant methodology, including if necessary workpackages and alternative strategies. The student will finalize the writing of his/her manuscript in a synthetic manner and eventually illustrate this by judiciously designed figures. B) Participation to the annual iGEM competition is by essence an initiative from interested master students and can only be effective if a team is put together (typically between 8 and 12 students) during the year preceding the enrolment of the team. In addition, at least one Professor within the ISV should agrees to support and coordinate the activity. A first phase of brainstorming and literature search will allow conceptualizing a synthetic biology project aimed at solving a societal problem. A promotion file will be prepared as a support for funding advertisement. During the summer holidays, the team will work in the laboratory to carry out the planned experiments. A wiki page should be constructed to describe the work done and the genetic constructs obtained. In October or November, the team will go to Boston to present their results. A poster and an oral presentation will have to be prepared for this end. Detailed information about the competition is available on the web (type iGEM in a search engine).

Other infos	A) Evaluation: The coaching committee will evaluate the student's participation, approach and investment, while two competent readers (different from the advisor) will appreciate the written work, according to a defined evaluation grid. Individual feedbacks will be provided to the students. B) Evaluation: In case of a participation to the iGEM contest, the professor(s) supporting the activity will evaluate the students based on their participation and achievements (page wiki, poster and final presentation). This evaluation will eventually be modulated with a self-evaluation made by the students themselves.
Faculty or entity in charge	SC

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Aims
Master [120] in Chemistry and Bioindustries	BIRC2M	5		
Master [120] in Biochemistry and Molecular and Cell Biology	BBMC2M	5		