Course Specifications
Valid as from the academic year 2020-2021

Due to Covid 19, the education and evaluation methods may vary from the information displayed in the schedules and course details. Any changes will be communicated on Ufora.

Course offerings and teaching methods in academic year 2020-2021

A (semester 1)  Dutch  Gent  
lecture  5.0 h  
guided self-study  45.0 h  
online lecture  0.0 h

B (semester 1)  English  
guided self-study  45.0 h  
lecture  5.0 h  
online lecture  0.0 h

Offered in the following programmes in 2020-2021

Master of Science in Biochemistry and Biotechnology  
crds  3  
offering  B

Teaching languages
Dutch, English

Keywords
Scientific method, scientific literature, scientific research proposal, scientific report

Position of the course
The student is familiarized with all the crucial steps in the scientific method relevant to hypothesis testing and design of adequate experimental protocols. As a basis for writing the Master’s dissertation, the student learns to write a clear scientific report by preparing a state of the art summary of the relevant scientific literature on a particular topic. In this report, a firm scientific question is recognised and formulated, and an experimental approach is designed. The report should also mention alternative approaches if unexpected experimental problems arise. Next to collecting and summarising the necessary scientific information in a synthetic, rational and systematic way, the student needs to formulate a research proposal in his report. That proposal will form the basis of his/her Master’s dissertation.

Contents
The knowledge acquired by the student on the scientific method and scientific reporting is put into practice using the chosen Master’s dissertation topic as the subject of the scientific report. The specific topic for which the scientific information is summarized is embedded in the different majors of the education program and is directly linked to the Master’s thesis. The scientific report consists of a short introduction of the scientific question(s), a summary of the aims, and the design of a practical approach to address these questions. The report should refer to the relevant literature where appropriate. In the theoretical part of the course, experts will present to the students during 3 or 4 sessions a synopsis of the important aspects of the Master’s dissertation. These aspects are: (1) the formatting and content aspects of the Master’s dissertation and the oral defence, (2) summary of frequently occurring problems in statistical analysis and
error analysis in experimental research in life sciences, (3) how to write a successful project proposal, (4) correct scientific reporting and examples of scientific fraud. An additional session will deal with how to prepare a PhD.

Initial competences
Experience from the Bachelor's and Master's projects

Final competences
1. The student is fully aware of the rationale behind the scientific method and can reduce a scientific question to a limited number of experimentally testable specific biochemical, biological and biotechnological questions.
2. When the emphasis of the topic of the Master's dissertation is on an application or the design of a technology, the student can clearly formulate the different steps in this process.
3. The student can autonomously gather from different sources relevant scientific information on a biochemical, biological or biotechnological subject.
4. The student can critically evaluate scientific literature and formulate logical conclusions for translation into working hypotheses for initiating research activities.
5. He can report his findings logically and with clear argumentation in a brief and structured proposal.
6. The student can present and discuss scientific information with colleagues in an objective and critical way.

Conditions for credit contract
Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract
This course unit cannot be taken via an exam contract

Teaching methods
Guided self-study, lecture, online lecture

Learning materials and price
Syllabus, scientific journals related to the topic of interest
Cost: 5 euro

References
To be defined

Course content-related study coaching
Interactive support via Ufora and email; oral consultation with the promoter or scientist guiding the Master's dissertation

Evaluation methods
end-of-term evaluation and continuous assessment

Examination methods in case of periodic evaluation during the first examination period
Assignment

Examination methods in case of periodic evaluation during the second examination period
Assignment

Examination methods in case of permanent evaluation
Skills test

Possibilities of retake in case of permanent evaluation
Examination during the second examination period is possible

Extra information on the examination methods
Examination methods in case of permanent evaluation Short written evaluation by the promoter (Criteria: communication and extent of independence)
Permanent evaluation consists of a consultation/evaluation session between promoter/guiding scientist and the student. During these sessions, the progress made in defining the project proposal is discussed and, if necessary, adjusted. This consultation/evaluation is not subject to quotation.
The periodic evaluation comprises the evaluation of (1) the written project proposal (max. 5 pages of text (excluding references, figures and schemes), with short summary), (2) literature study, and (3) a bibliographical assignment. This evaluation is done by an independent reading commission, composed of experts in the different major/minor fields of the education program Biochemistry Biotechnology. The promoter

(Approved)
and/or guiding scientist of the Master’s dissertation will be asked to submit a query on the process of writing the assignment. This appreciation will be calculated in the final evaluation of the assignment. The marks for this course are thus acquired completely and solely through periodic evaluation. In case of retake, the assignments comprising the periodic evaluation have to be repeated.

Calculation of the examination mark

Project proposal
(1) Summary (abstract in 250 words)
(2) Literature study on the biochemical, biological and biotechnological questions (max. 2 pages, excluding figures, tables, references and other addenda). Further specifications on the format will be communicated.
(3) Project proposal (introduction of the scientific question(s), a summary of the aims, the design of a practical approach to address these questions, expected results, time schedule (max. 5 pages, excluding figures, tables, references and other addenda). Further specifications on the format will be communicated.