BIO-597

Master project in Life Sciences Engineering

Profs divers *

Cursus	Sem.	Type
Life Sciences Engineering	PME	Obl.

Language of teaching	English
Credits	30
Withdrawal	Unauthorized
Session	Summer
Semester	Spring
Exam	Oral
Workload	900h
Weeks	
Project	900 weekly
Number of positions	

It is not allowed to withdraw from this subject after the registration deadline.

Summary

The Master project is the culmination of a student's work of analysis, design and implementation, which proves his/her engineering capacities. Students will engage in laboratory-based projects in the field of life sciences engineering.

Content

In the context of a Master Project, the student works on a problem defined by the head of the laboratory where the project will be carried out, whether that is at EPFL, at another university where he/she is doing an exchange program, or in a company. The head of the laboratory must
ensure that the student can carry out the necessary analysis and design work that will subsequently allow the EPFL advising professor to evaluate the engineering capacities of the student.

Learning Prerequisites

Required courses

Master cycle Life Sciences Engineering

Learning Outcomes

By the end of the course, the student must be able to:

- Manage an individual research project
- Develop expertise in a specific area of research
- Implement appropriate technologies to address the scientific or engineering problem being studied
- Conduct experiments appropriate to the engineering problem being studied
- Assess / Evaluate data obtained in wetlab and computational experiments
- Integrate data obtained in wetlab and computational experiments
- Optimize experimental protocols and data presentation
- Plan experiments to test hypotheses based on obtained results

Transversal skills

- Assess progress against the plan, and adapt the plan as appropriate.
- Plan and carry out activities in a way which makes optimal use of available time and other resources.
- Use a work methodology appropriate to the task.

- Continue to work through difficulties or initial failure to find optimal solutions.
- Keep appropriate documentation for group meetings.
- Demonstrate the capacity for critical thinking
- Demonstrate a capacity for creativity.
- Write a scientific or technical report.
- Collect data.
- Make an oral presentation.

Expected student activities

Students will focus on hands-on experimentation, which may be wetlab-based or computer-based, depending on the project. Students will read and discuss assigned papers from the original
scientific literature. As part of the evaluation process, students are required to submit a written report and give an oral presentation that summarizes and interprets their results.

Assessment methods

Written report
Oral presentation

Supervision

Others	Typically, the student will be matched with a secondary mentor (this will usually be a senior PhD student or a Postdoctoral Fellow) who will take responsibility for the day-to-day supervision and training of the student.

Resources

Bibliography

Appropriate reading materials will be assigned by the student's mentor depending on the nature of the research project. The assigned reading material will usually comprise original research papers, review articles, and secondary sources (e.g., books).