BIO-501

Lab immersion I

Profs divers *

Cursus	Sem.	Type
Computational biology minor	E, H	Opt.
Life Sciences Engineering	MA1, MA2, MA3, MA4	Opt.
Minor in life sciences engineering	E, H	Opt.

Language of teaching	English
Credits	8
Withdrawal	Unauthorized
Session	Winter, Summer
Semester	Fall
Exam	During the semester
Workload	240h
Weeks	14
Hours	**8 weekly**
Practical work	8 weekly
Number of positions	

Il n'est pas autorisé de se retirer de cette matière après le délai d'inscription.

Summary

The student will engage in a laboratory-based project in the field of life sciences engineering. Student projects will emphasize acquisition of practical skills in experimentation and data analysis.

Content

A typical project will involve "hands-on" wetlab experimentation and data analysis, although theoretical and computationally-oriented projects are also possible. The projects are available on the web sites of SV laboratories (including core facilities) or discussed directly with a potential head of lab.
The students are confronted with the realization of a laboratory-based project integrating specific aspects of life sciences engineering.
This project will allow them to apply, to concrete problems, skills of domain and transversal skills acquired during their studies.
Projects have to be done in an EPFL lab.

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 the specific problem being studied
- Assess / Evaluate data obtained in wetlab and computational experiments
- Interpret 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 a capacity for creativity.
- Demonstrate the capacity for critical thinking
- Write a scientific or technical report.

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 cientific literature. As part of the evaluation process, students may be required to submit a written report or to give an oral presentation that summarizes and interprets their results.
Total workload: 16h/week during 14 weeks or 5-6 weeks full time (42h/week)
Can be done during the autumn or spring semster or in between two semesters.

Assessment methods

Continuous control
The mode of evaluation must be clearly defined and agreed between the student and the project mentor in advance. Typically the mode of evaluation will include a written report and /or an oral presentation prepared and delivered by the student.

[Unless an exception is explicitly agreed between the student and the supervisor in charge,] the written report is due no later than the Friday of the first (spring) or second (autunm) week after the end of classes. [The supervisor may require an oral exam or other types of assesments depending on the project. In this case, he/she will inform the student at the beginning of the project, indicating the weighting of the different parts evaluated].

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.