

BIO-643

Integrative structural biology for Life sciences

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Cursus	Sem.	Type
Molecular Life Sciences		Opt.

Language of teaching	English
Credits	2
Session	
Exam	Oral presentation
Workload	60h
Hours	28
Lecture	10
Exercises	14
Practical work	4
Number of positions	12

Frequency

Every 2 years

Remark

Registration via edms@epfl.ch

Summary

Hands-on course in Biomolecular Integrative Structural Biology by SV experts in the field of X-ray crystallography, cryo-Electron Microscopy, Bio-NMR and protein modeling tools. No previous knowledge in Structural Biology or Bioinformatics is required.

Content

This course will teach how to interpret data from major structural biology techniques and connect experimental approaches to computational modeling. You will have sessions that are tutorial based on the main structural biology software as an introduction to data processing workflows.

Topics discussed in class are expected to include:

- Modeling tools for proteins, such as alphafold; and integration with experimental data
- Single Particle Cryo-Electron Microscopy
- Macromolecular X-ray crystallography
- Bio-NMR

Other topics may be included as needed. Lectures and hands-on will be presented by experts from EPFL and in the Lemanic region.

Doctoral students will present in duo a 25 mins talk on a specific subject within the field at the end of the course.

Visit of structural Biology Core Facilities within EPFL will be proposed.

Note

Do not register by yourself, but please contact edms@epfl.ch.

The course is open to max. 12 students and it will take place during the spring, from 19th February to 27th May 2024 --> every Monday from 15h00 to 16h45 in room CO120

Keywords

Macromolecular X-ray crystallography, Modeling and molecular dynamic of proteins, Single Particle Cryo-Electron Microscopy, Bio-NMR, Mass Spectrometry applied to Structural Biology.

Learning Prerequisites

Required courses

Basic molecular Biology

Please bring your own laptop and mouse

Learning Outcomes

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

- Develop skills in interpreting data from major structural biology techniques and effectively connecting experimental methods with computational modeling.

Assessment methods

Oral presentation

Resources

Moodle Link

- <https://go.epfl.ch/BIO-643>