

CH-412

**Chemical biology**

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Cursus	Sem.	Type
Bioengineering	MA2, MA4	Opt.
Chimiste	MA2, MA4	Opt.
Life Sciences Engineering	MA2	Opt.
Neuroscience		Obl.
Sciences du vivant	MA2, MA4	Opt.

Language of teaching	English
Credits	3
Session	Summer
Semester	Spring
Exam	Written
Workload	90h
Weeks	14
<b>Hours</b>	<b>2 weekly</b>
Courses	2 weekly
<b>Number of positions</b>	

**Summary**

The class will discuss how the tools of chemistry can be utilized to address important problems in biology. Through the discussion of landmark papers in chemical biology the students will be introduced into research at the interface of chemistry and biology.

**Content**

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**Keywords**

chemical biology, protein chemistry, chemical probes, protein engineering, chemical genetics

**Learning Outcomes**

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

- Characterize the main concepts in chemical biology
- Design an experiment to engineer an autofluorescent protein
- Describe how proteins can be chemically modified in live cells
- Develop an experiment to exploit unnatural amino acids
- Describe a strategy to generate allele-specific kinase inhibitors
- Categorize different strategies to derivatize proteins for mechanistic studies
- Contrast forward and reverse chemical genetics
- Develop a strategy for determining the protein target of a bioactive molecule

**Transversal skills**

- Access and evaluate appropriate sources of information.

**Teaching methods**

Ex cathedra and discussions

**Expected student activities**

Read papers to be discussed before the class

**Assessment methods**

100% Oral exam

**Supervision**

Office hours	No
Assistants	No
Forum	No
Others	Students are welcomed to contact Kai Johnsson via email or after the class to schedule appointments

**Resources****Ressources en bibliothèque**

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**Notes/Handbook**

Papers and slides will be distributed via the the website of the teaching section or by email before the class.

**Websites**

- [http://scgc.epfl.ch/telechargement\\_cours\\_chimie](http://scgc.epfl.ch/telechargement_cours_chimie)