

BIO-441

**Nutrition: from molecules to health**

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Cursus	Sem.	Type
Biotechnology minor	H	Opt.
Life Sciences Engineering	MA1, MA3	Opt.
Statistics	MA1, MA3	Opt.

Contact language	English
Credits	4
Session	Winter
Semester	Fall
Exam	During the semester
Workload	120h
Weeks	14
<b>Hours</b>	<b>4 weekly</b>
Lecture	2 weekly
Exercises	2 weekly
<b>Number of positions</b>	

**Remark**

For MSc students only

**Summary**

The course addresses methods/technologies to study how nutrition affects biological and pathophysiological processes. It provides an overview of molecular phenotyping of individuals and key aspects to perform clinical investigations, covers nutrigenomics, genetics, micronutrients, microbiota.

**Content**

- Methods and technologies to study how nutrition affects biological and pathophysiological processes; opportunities and challenges
- Introduction and current utility/challenges of methodologies for nutritional and health sciences studies (genomics, proteomics, metabolomics, micronutrient analysis, clinical trials)
- Translations and applications of molecular phenotyping towards precision nutrition (nutrigenetics, epigenetics, micronutrients and microbiome)

**Learning Outcomes**

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

- Have an understanding of molecular mechanisms of nutrients on health
- Demonstrate knowledge about current technologies and their utility and limitations for human nutrition and health research
- Have a good knowledge of the application of clinical trials to nutrition studies

**Transversal skills**

- Access and evaluate appropriate sources of information.
- Demonstrate the capacity for critical thinking
- Summarize an article or a technical report.
- Set objectives and design an action plan to reach those objectives.

**Teaching methods**

Lectures and exercises (attendance to lectures and exercises is mandatory)

### **Expected student activities**

Reading, analysis, presentation of a scientific article in the field of nutrition.  
Preparation of a mini grant proposal.

### **Assessment methods**

Presentation of one scientific article, quality of the mini grant

### **Supervision**

Assistants                      No

### **Resources**

#### **Moodle Link**

- <https://go.epfl.ch/BIO-441>