

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	Opt.

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

**Remark**

Integrated and holistic systems approach from molecules to health - For MSc students only

**Summary**

The course addresses how nutrition affects health. It provides an overview of the omics technologies for comprehensive molecular phenotyping of individuals and key aspects to perform clinical investigations in the nutrition and health, covers nutrigenomics, nutrigenetics, micronutrients, microbiota.

**Content**

- How nutrition can influence health (with emphasis on non-communicable diseases such as CVD, diabetes); 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 (nutrigenetics, epigenetics, micronutrients and microbiome)

**Learning Outcomes**

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

- Define the basics of nutrition and its impact on human health
- Demonstrate knowledge about current omics technologies and their utility and limitations for human nutrition and health research
- Demonstrate an understanding of several molecular mechanisms of nutrients on health
- Demonstrate 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**

Office hours	Yes
Assistants	No

### **Resources**

#### **Moodle Link**

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