BIO-441

Nutrition: from molecules to health

Descombes Patrick, Hager Jörg, Rezzi Serge

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

Language of teaching	English
Credits	4
Session	Winter
Semester	Fall
Exam	During the semester
Workload	120h
Weeks	14
Hours	**4 weekly**
Lecture	2 weekly
Exercises	2 weekly
Number of positions	

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