**Nutrition: from molecules to health**
Descombes Patrick, Hager Jörg, Rezzi Serge, Wiederkehr Andreas

**Cursus**  
Ingénierie des sciences du vivant  
Mineur en Biotechnologie  
Sciences du vivant

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<tr>
<th>Cursus</th>
<th>Sem.</th>
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**Language**  
English

**Credits**  
4

**Session**  
Summer

**Semester**  
Spring

**Exam**  
During the semester

**Workload**  
120h

**Weeks**  
14

**Hours**  
4 weekly

- **Lecture**  
  2 weekly
- **Exercises**  
  2 weekly

**Number of positions**

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

**Summary**
The course will address how nutrition affects human health and disease. We will describe how nutrients are absorbed and metabolized. We will introduce the concept of the integrated systems approach to better define human health based on holistic phenotyping of human individuals

**Content**
- Fundamentals of nutrition and its impact on human health and non-communicable disease
- Introduction of the gastrointestinal system and the hormonal regulation of digestion and absorption.
- Effect of glucose and fructose on tissue function and human health
- Polyphenols and their impact on health and disease
- Introduction and current utility/challenges of omics technologies for nutritional and health sciences, with emphasis on the characteristics of the technologies (genomics, proteomics, metabolomics, micronutrient analysis)
- Translations and applications of molecular phenotyping in the areas of metabolic and gastrointestinal health.
- Concept and utility of molecular phenotyping to clinical intervention studies
- Methods and concepts of human genetics and their applications to nutrigenetics

**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
- Manage principles of of macronutrient absorption and metabolism
- Demonstrate knowledge about current omics technologies
- Develop a molecular understanding of the role of nutrition in health

**Teaching methods**
Lectures

**Expected student activities**
Reading, analysis, presentation of a scientific article in the field of nutrition and preparation of a mini grant proposal.

Assessment methods
Weakly evaluation with a quiz (questions related to the course), presentation of one scientific article (from a proposed list), writing of mini grant