

BIO-441

Nutrition: from molecules to health

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Cursus	Sem.	Type
Biotechnology minor	E	Opt.
Life Sciences Engineering	MA2, MA4	Opt.

Language of teaching	English
Credits	4
Session	Summer
Semester	Spring
Exam	During the semester
Workload	120h
Weeks	14
Hours	4 weekly
Courses	2 weekly
Exercises	2 weekly
Number of positions	

Remark

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. It will provide an overview of the molecular mechanisms of how nutrient interacts with biological processes, and the state-of-the-art omics technologies that are used in the field. We will introduce the concept of the integrated

Content

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- 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
- 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 nutrigenomics and nutrigenetics and their applications to personalized nutrition

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
- Develop Good knowledge of macro- and micronutrient absorption and metabolism
- Develop knowledge about current omics technologies and their utility and limitations for human nutrition and health research
- Develop a molecular understanding of the role of nutrition in health

Teaching methods

Lectures and exercises

Expected student activities

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

Reading, analysis, a weekly exercise related to the course, 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

Evaluation based on the presentation of one scientific article (from a proposed list), and the writing of research mini grant on a topic covered by the course

Supervision

Office hours Yes

Assistants Yes