

BIO-312

Genomic solutions to sustainable development

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Cursus	Sem.	Type
Life Sciences Engineering	BA6	Obl.

Language of teaching	English
Credits	2
Session	Summer
Semester	Spring
Exam	Written
Workload	60h
Weeks	14
Hours	2 weekly
Courses	2 weekly
Number of positions	

Summary

The course explores how genomic technologies can contribute to achieving the UN Sustainable Development Goals. Students will learn how genomics impacts healthcare, agriculture, energy, and environmental conservation through lectures, case studies, and practical projects.

Content

This course offers an introduction how genomic technologies can address global challenges in sustainability, health, and the environment. Anchored in the framework of the United Nations Sustainable Development Goals, the course highlights how modern genomic technologies can be applied to create sustainable solutions across diverse fields, including healthcare, agriculture, energy, and environmental conservation. Through a combination of lectures, case studies, and hands-on practice, students will gain the knowledge and skills to apply genomic solutions to real-world problems.

- UN sustainable development goals & policies
- Personalized medicine
- Gender & health
- Agrigenomics
- Microbiome engineering for future health
- Water, earth, and air monitoring
- Synthetic biology & sustainable energy
- Environmental conservation
- Introduction to real-time genomics
- Practical session on real-time genomics

Keywords

Genomics, sustainable development, precision medicine, food security, clean energy, environmental conservation, inequality, gender health, microbiome, nanopore sequencing

Learning Prerequisites**Required courses**

Basic genetics and molecular biology.

Recommended courses

BIO-373 - Genetics and genomics

Teaching methods

- Lectures
- Hands-on practical sessions

Assessment methods

Written exam during the summer session

Resources

Moodle Link

- <https://go.epfl.ch/BIO-312>