

ENV-470

**Development engineering**

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Cursus	Sem.	Type
Energy Science and Technology	MA2, MA4	Opt.
Environmental Sciences and Engineering	MA2, MA4	Opt.
Minor in Engineering for sustainability	E	Opt.
Minor in Integrated Design, Architecture and Sustainability	E	Opt.

Language of teaching	English
Credits	4
Withdrawal Session	Unauthorized Summer
Semester Exam	Spring During the semester
Workload	120h
Weeks	14
<b>Hours</b>	<b>4 weekly</b>
Courses	2 weekly
TP	2 weekly
<b>Number of positions</b>	
<b>It is not allowed to withdraw from this subject after the registration deadline.</b>	

**Remark**

Development Engineering: Innovation and Technologies in the Global South

**Summary**

This course teaches the fundamentals of technologies for development (Development Engineering) to design, pilot, and deploy appropriate, affordable and robust technologies to address sustainable development challenges and especially those related to extreme poverty in Low-income settings.

**Content***Topics:*

- Introduction to Development Engineering
- What is poverty?
- Sustainable development in the context of Low- and Middle-Income Countries
- Essential Technologies
- Road to Impact
- Product Value Chain
- Sustainable Business Model Canvas
- Development-Humanitarian-Peace Nexus

**Keywords**

Development, development engineering, developing countries, emerging countries, Global South, Low-and-Middle

Income Countries (LMIC), poverty reduction, social entrepreneurship, technologies for development, sustainable impact, sustainable business models, value chain canvas, scale-up, Humanitarian-Peace-Development Nexus.

## Learning Outcomes

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

- Identify essential technologies and how they contribute to sustainable development
- Analyze affordable, sustainable, and socially acceptable technology solutions, for development
- Elaborate the interlinkages between development, humanitarian action and peace promotion.
- Carry out Development engineering projects in an interdisciplinary manner, i.e. integrating the contributions and expertise of different disciplines.
- Propose sustainable and socially responsible business solutions, adapted to the specific context of Low and middle-income countries.
- Characterize underlying causes and effects of extreme poverty, faced by emerging and developing countries.

## Transversal skills

- Demonstrate the capacity for critical thinking
- Access and evaluate appropriate sources of information.
- Identify the different roles that are involved in well-functioning teams and assume different roles, including leadership roles.
- Give feedback (critique) in an appropriate fashion.

## Teaching methods

Lectures (100% in English) flipped classroom, guest lectures, group work/presentation, recommended reading list.

## Expected student activities

Homework, group work and presentation, mandatory watching of MOOC videos.

## Assessment methods

During the semester

- Group work1: critical assessment of a technology (30%)
- Group work2: Entrepreneurial pitch presentation, plus written assignment. (40%)
- MCQ written exam (30%)

## Supervision

Others Teachers and teaching assistants will be available to guide students in their various group works.

## Resources

### Bibliography

The bibliography will be provided at the beginning of the course.

### Moodle Link

- <https://go.epfl.ch/ENV-470>