

ENV 501 / GR A3 30

Material Flow Analysis and resource management

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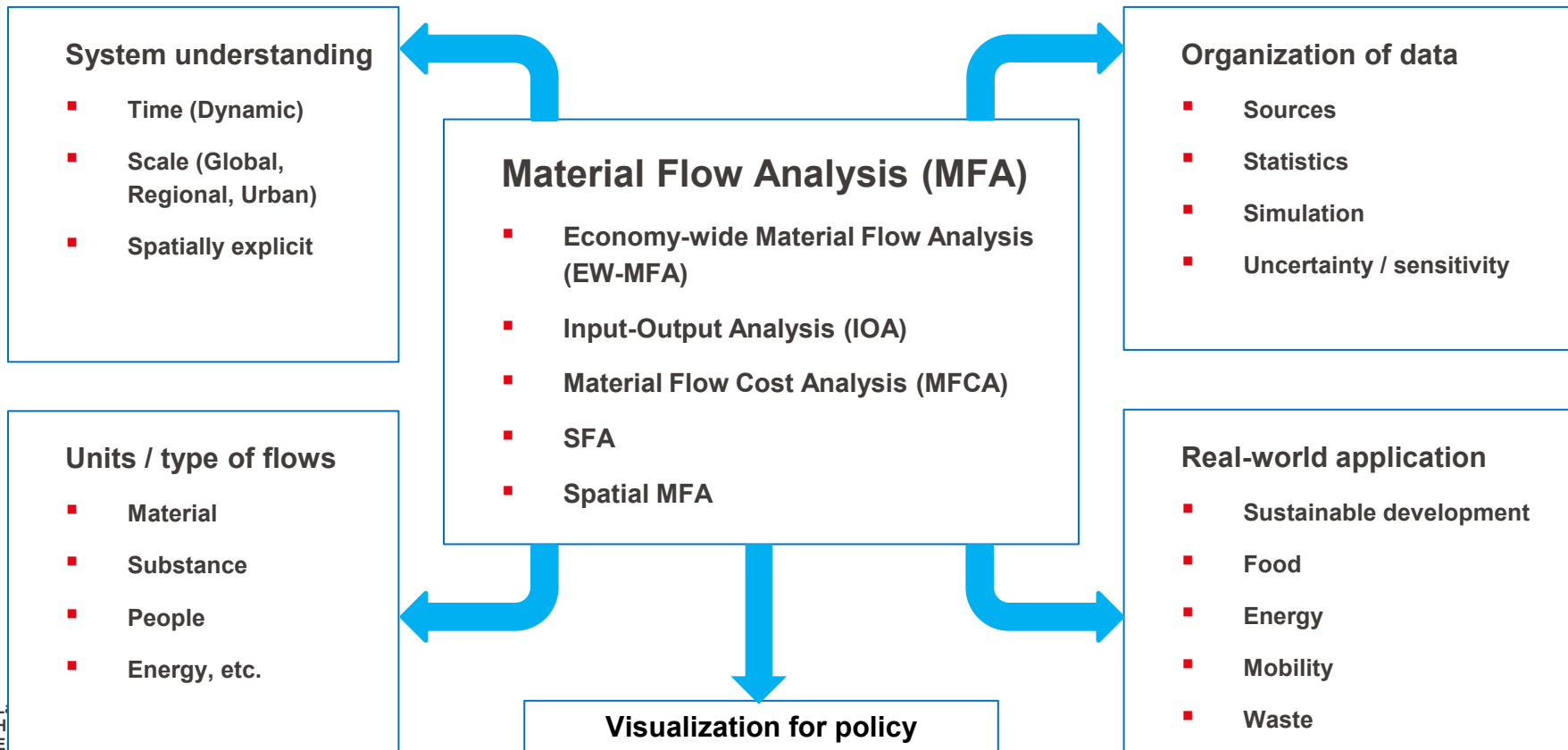
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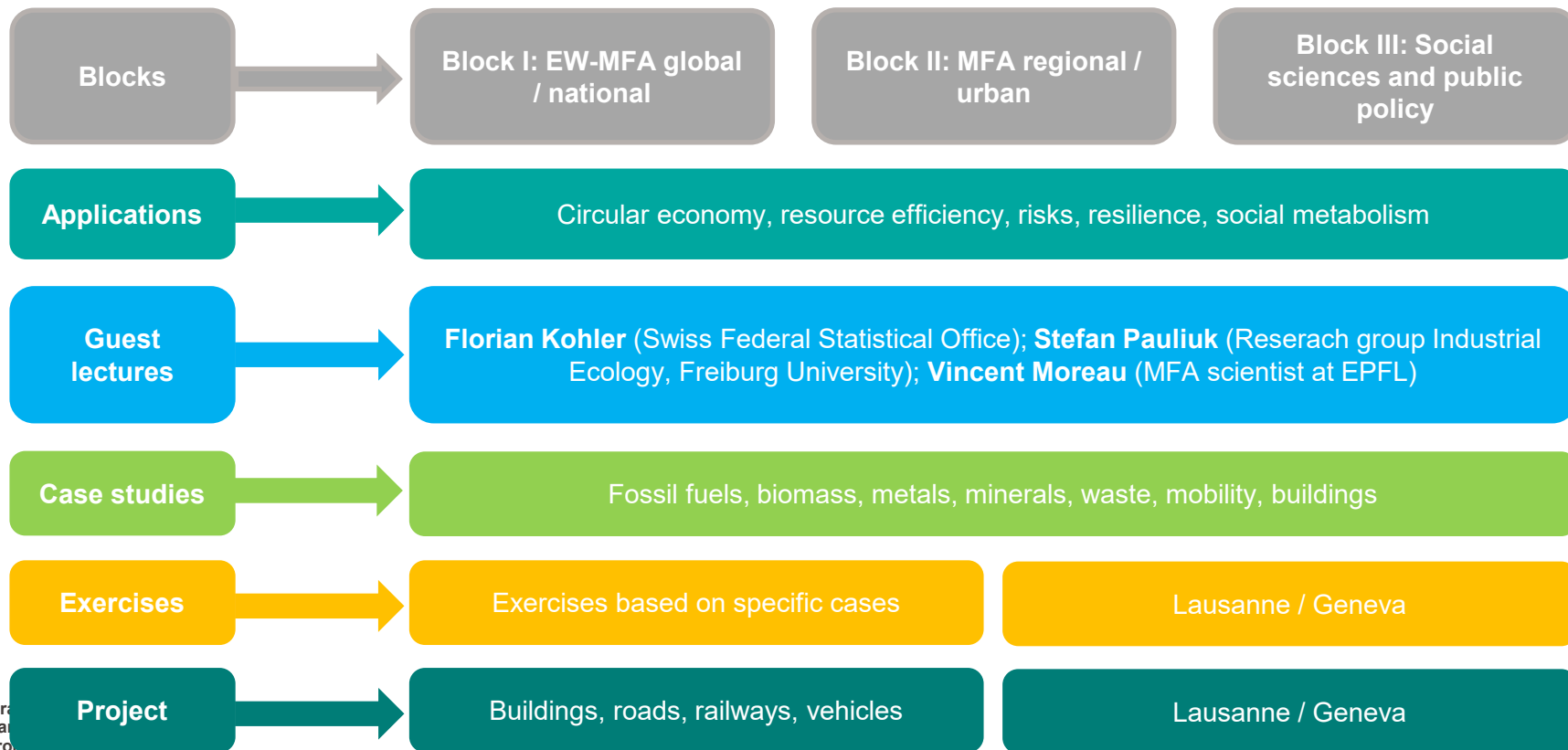
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Fall 2024

ENV 501 – Material flow analysis and resource management

- This course provides the **basis to understand material and energy production and consumption** processes
- Students learn **how to develop a material flow analysis** and apply it to resource management cases
- Students learn to justify and critically reflect on **system analysis**
- Students **derive interventions** for production and consumption processes based on their results
- Students **analyze the implications** of their models on resource use, economic activities, and policy





8:15 - 9:00 and 9:15 - 10:00

13:15 - 14:00

14:15 - 15:00

Block I:
EW-MFA
global /
national

W1 - Sep 12

Introduction to the course and general concepts

All

Exercise

Project

W2 - Sep 19

EW – MFA and EW – MFA in different countries

FMC

Exercise

Project

W3 - Sep 26

EW – MFA in the Swiss context, Urban Metabolism

External Guest –
Florian Kohler

Exercise

Project

W4 - Oct 03

EW – MFA in the Swiss context: Cantons and Circular Economy

FMC

Exercise

Project

W5 - Oct 10

The Service-Stock-Flows Nexus

CRB

Exercise

Project

W6 - Oct 17

Dynamic MFA

External Guest –
Stefan Pauliuk

Exercise

Project

Oct 24

Autumn break

Block II:
MFA
regional /
urban

W7 - Oct 31

Spatial MFA

FMC

Exercise

Project

W8 - Nov 07

Input-Output Analysis and Material Flow Cost Accounting

External Guest –
Vincent Moreau

Exercise

Project

W9 - Nov 14

MFA and Uncertainty

External guest –
Stefan Pauliuk

Exercise

Project

W10 - Nov 21

Case studies: Waste management in Indonesia / Critical Raw Materials in the Swiss context

GF & FMC

Exercise

Project

W11 - Nov 28

Social Metabolism

CRB

Exercise

Project

W12 - Dec 05

Agent-based model

CRB, FMC, MAH,
SLC

Past exam

Project

W13 - Dec 12

Group Project Presentation

CRB, FMC, MAH

Project

Project

W14 - Dec 19

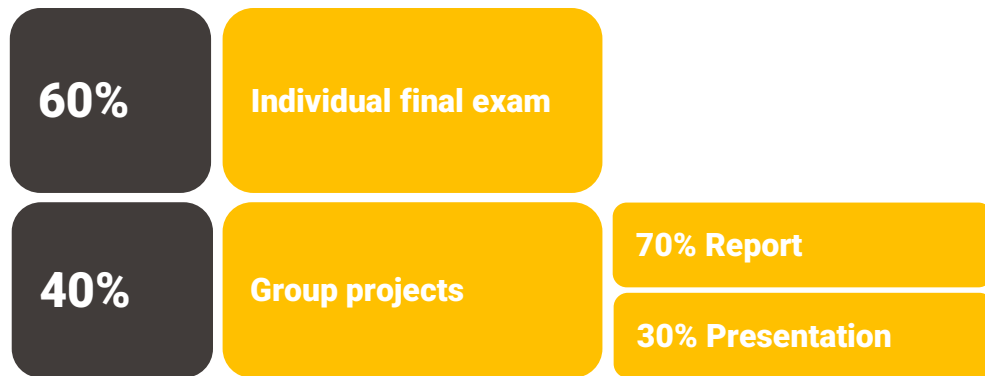
Group Project Presentation

CRB, FMC, MAH

Project

Project

Block III:
Social
sciences
and
public
policy



- Handwritten in class (duration 3h).
- The exam contains mostly conceptual and interpretation questions related to the methods we introduced in the lectures.
- It also contains calculation questions which you can prepare for by going through the exercises (bring a calculator).

Group project presentations

- 10-15 minute presentation plus 5-10 minutes of discussion (discussants).
- Present your results as if you were a consultant reporting to stakeholders.
- Assume she/he understands basic MFA but has not read your report and is primarily (only) interested in the environmental/economic/social/policy implications.
- She/he is busy and wants to hear your main conclusions and suggestions, and also potential for future collaboration.
- You may use slides but other support is acceptable.

Important dates

**Dec 12 /
Dec 19**

**Group project
presentation**

In class

Jan 10

**Group project
report**

Upload Moodle

The screenshot shows the Moodle interface for the course 'Material flow analysis and resource management'. At the top, there is a navigation bar with the EPFL logo and the word 'MOODLE'. Below this, the course title is displayed in red. A breadcrumb trail indicates the path: 'Dashboard > My courses > ENV-501'. A vertical list of course sections is shown on the left, with 'EXERCISES' highlighted in red.

> **EPFL** | MOODLE

Material flow analysis and resource management

Dashboard > My courses > ENV-501

- COURSE ORGANIZATION
- FORUM
- READ MORE ABOUT MFA
- COURSE INFOS
- GROUP PROJECT
- LECTURES
- EXERCISES**

A photograph of a desert landscape. In the foreground, there is a large, dark, rocky outcrop. Behind it, a light-colored, sandy slope leads up to a higher, more eroded cliff face. A narrow, winding road or path is visible on the slope. The sky is not visible, and the overall scene is arid and rocky.

Thank you for your attention!