

ENV 501 / GR A3 30

Material Flow Analysis and resource management

Prof. Dr. Claudia R. Binder claudia.binder@epfl.ch

Dr. Francisco Xavier Felix Martin Del Campo francisco.felixmartindelcampo@epfl.ch

Exercises Teacher Assistant Jaír Campfens jaír.campfens@epfl.ch

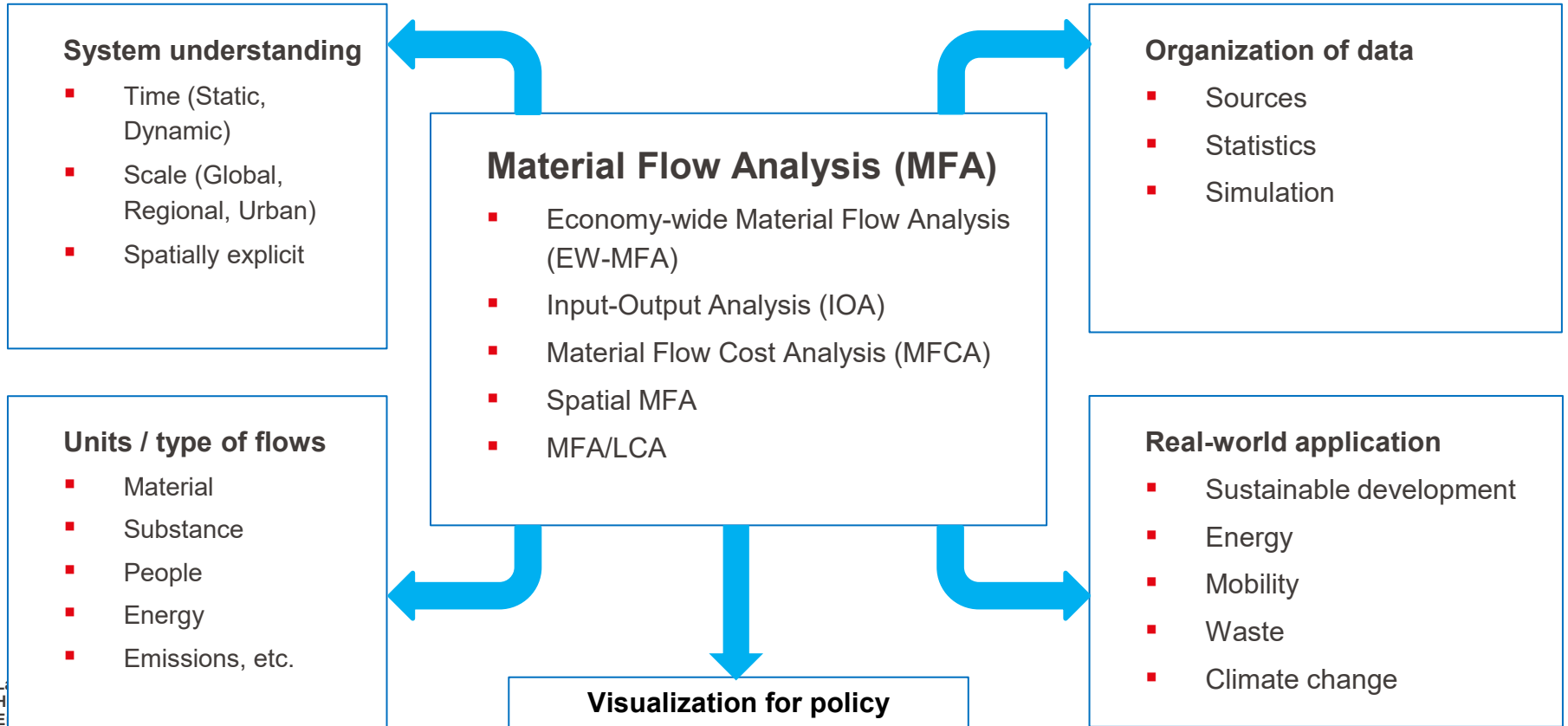
Exercises Teacher Assistant Léonard Léhot leonard.lehot@epfl.ch

Student Assistant Alicia Pérez Domouso alicia.perezdomouso@epfl.ch

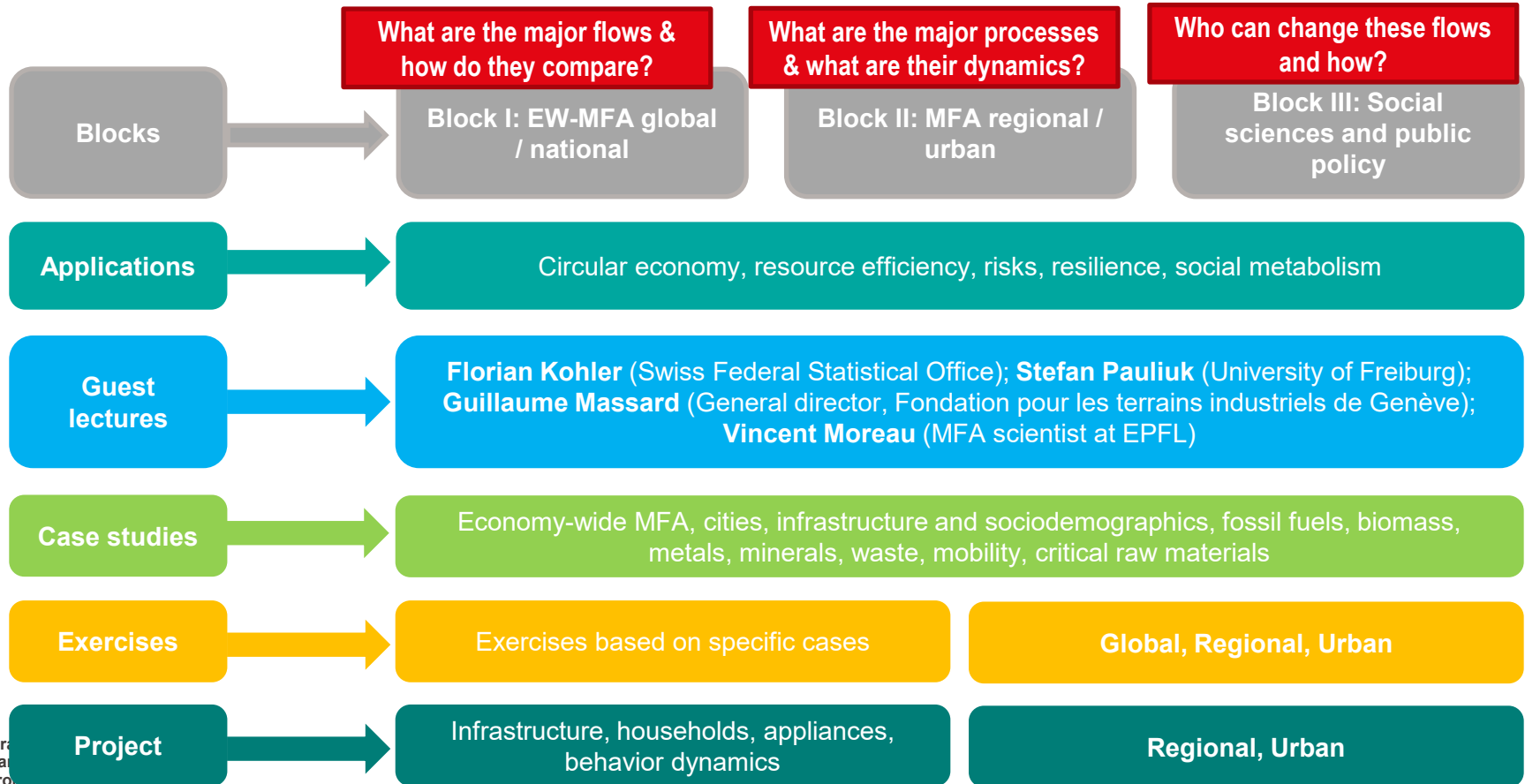
ENV 501 – Material flow analysis and resource management

This course provides the **basis to understand material and energy production and consumption** processes.

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



Course structure



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 11

Introduction to the course and general concepts

All

Exercise

Project

W2 - Sep 18

EW – MFA and EW – MFA in the Swiss context

External Guest –
Florian Kohler

Exercise

Project

W3 – Sep 25

Examples of EW – MFA. Scaling EW-MFA to Cantons

FMC

Exercise

Project

W4 - Oct 02

Urban Metabolism and Circular Economy

FMC

Exercise

Project

W5 - Oct 09

MFA method and the Stock-Flows-Service Nexus

CRB

Exercise

Project

W6 - Oct 16

Dynamic MFA

External Guest –
Stefan Pauliuk

Exercise

Project

Oct 23

Autumn break

Block II:
MFA
regional /
urban

W7 - Oct 30

Applications of MFA – case study

External Guest –
Guillaume Massard

Exercise

Project

W8 - Nov 06

Input-Output Analysis and Material Flow Cost Accounting

External Guest –
Vincent Moreau

Exercise

Project

W9 - Nov 13

Spatial MFA

FMC

Exercise

Project

W10 - Nov 20

Combined approaches: MFA + LCA; MFA + sociodemographics.

AS & FMC

Exercise

Project

Block III:
Social
sciences
and
public
policy

W11 - Nov 27

Combined approaches: MFA + surveys; Quasi-dynamic MFA

GF & FMC

Exercise

Project

W12 - Dec 04

Social metabolism

CRB

Past exam

Project

W13 - Dec 11

Agent-based model

CRB, FMC, MAH,
SLC

Project

Project

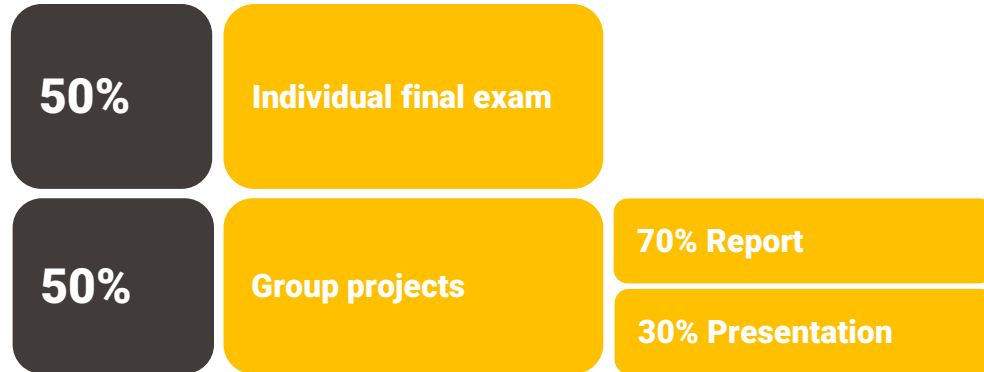
W14 - Dec 18

Group Project Presentation

All

Project

Project



- 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 18	Group project presentation	In class
Jan 9	Group project report	Upload Moodle

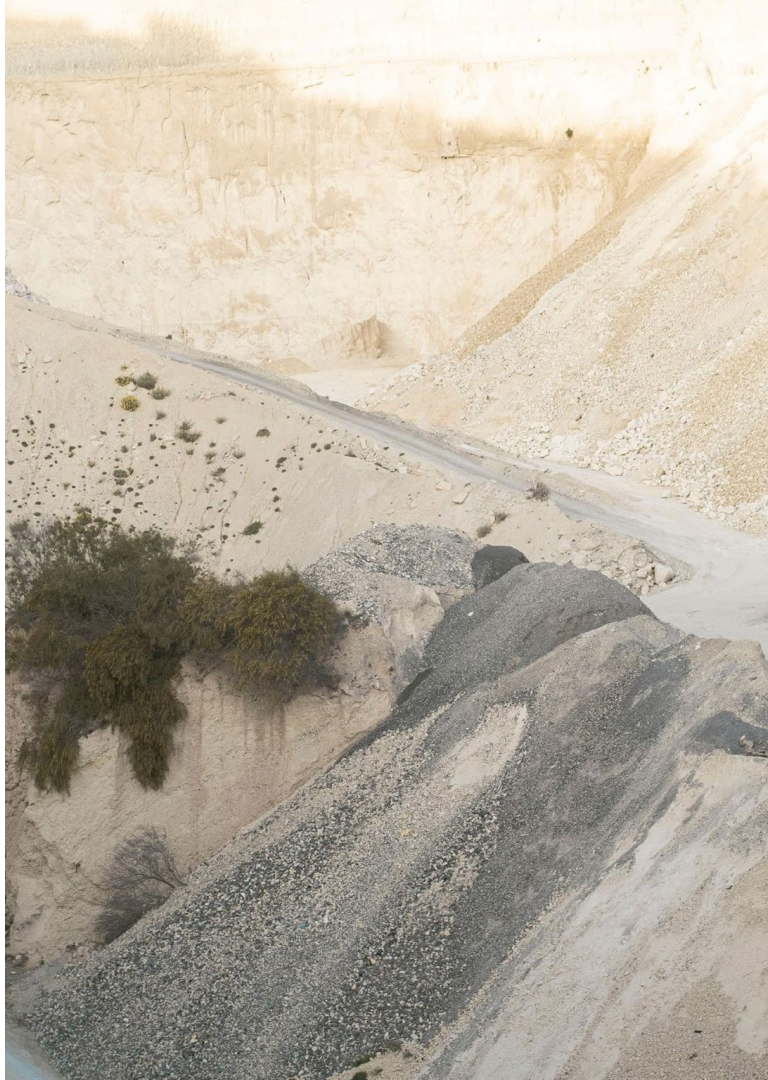
The screenshot shows the Moodle interface for the course 'Material flow analysis and resource management'. At the top, there is a navigation bar with the EPFL logo and the word 'MOODLE'. Below this, the course title is displayed in red. A breadcrumb trail indicates the user's location: 'Dashboard > My courses > ENV-501'. A vertical list of menu items is shown below the course title, 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**



**Thank you for your
attention!**