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UNIVERSITAT POLITÈCNICA DE CATALUNYA

6th International Seminar in **Sustainable Technology Development**

UPC, Vilanova i la Geltrú, 17-28 June 2013

http://is.upc.edu/seminaris-i-jornades/seminaris/std-2013

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UN DECADE OF EDUCATION FOR SUSTAINABLE DEVELOPMENT
DÉCENNIE DES N.U. POUR L'ÉDUCATION EN VUE DU DÉVELOPPEMENT DURABLE
2005-2014

D. G. de Educación y Cultura

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The Idea

UPC organizes the 6th edition of the **International Seminar on Sustainable Technology Development**, again of two weeks' duration, with the aim of bringing together the field forefront experts and Master students in sustainability.

The course is organized in the framework of the UPC Master in Sustainable Development, and aims **to connect experts, future researchers and policy-makers on real topics where long-term technological systems renewal is needed** in order to fulfill sustainability requirements.

Experts will find an opportunity to network and exchange their visions with other experts, share them with highly-motivated students and influence policies towards sustainability.

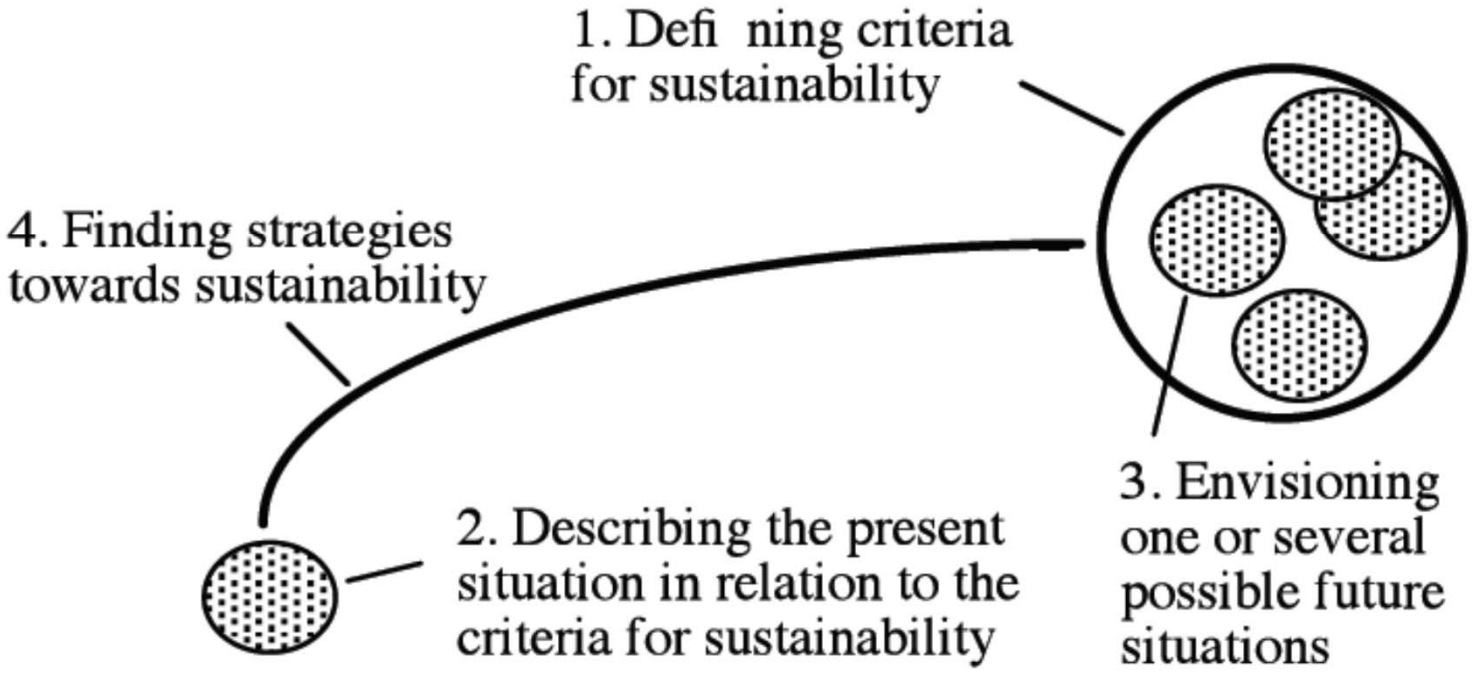
Objectives

- To increase the **understanding of a sustainable development in the long term** and the role of **technology therein embedded in systems**
- To increase the **capability to apply foresighting, forecasting and backcasting**
- To contribute to the **development of scientific work competences** of students
- To increase the **capability of teachers to teach the approach of future** imaging, foresighting, forecasting and backcasting
- To become an **experts' meeting point** and create **networking activities** among different groups and institutions



The Conceptual Approach

Backcasting



The Conceptual Approach Participatory Backcasting (NL)

Three types of demands:
(1) Normative demands
(2) Process demands
(3) Knowledge demands

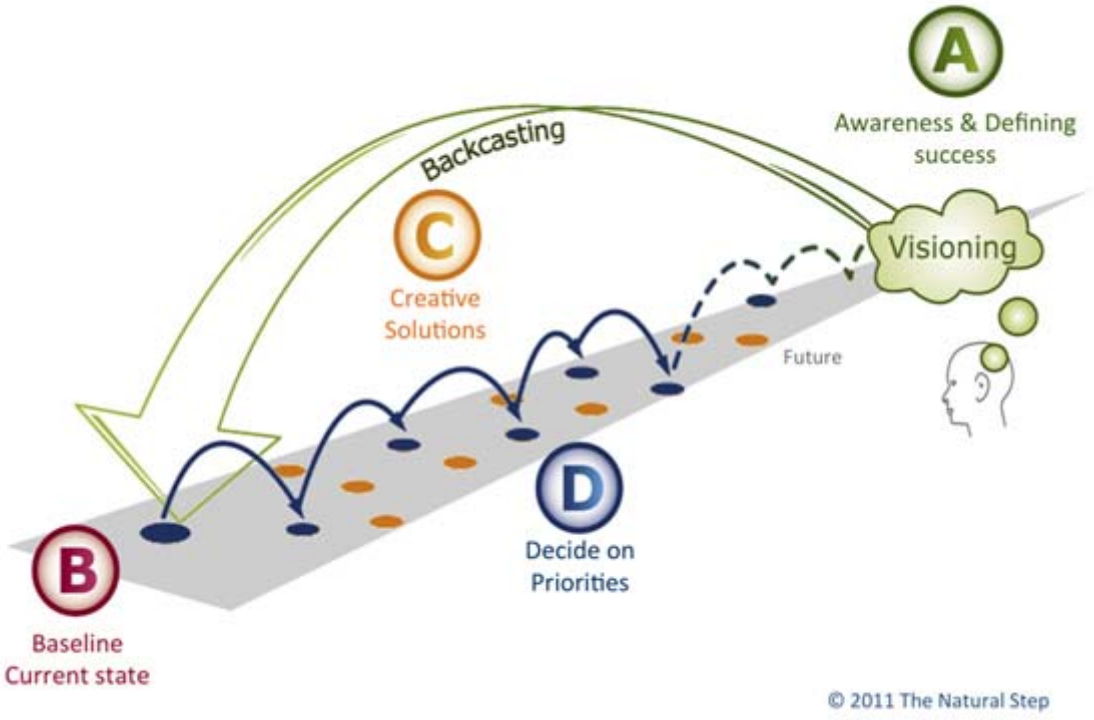
Different goals:
> Involvement of a wide range of stakeholders
> Future visions and follow-up agendas
> Awareness and learning among stakeholders
> Commitment and follow-up by stakeholders
> ...

Five steps:

STEP 1: Strategic problem orientation ⇄ *STEP 2: Develop future vision* ⇄ *STEP 3: Backcasting analysis* ⇄ *STEP 4: Elaborate future alternative & define follow-up agenda* ⇄ *STEP 5: Embed results and agenda & stimulate follow-up*

Four groups of tools and methods:
(1) Participatory/ interactive tools and methods
(2) Design tools and methods
(3) Analytical tools and methods
(4) Tools and methods for management, coordination and communication

The Conceptual Approach
The Natural Step (SE)



The Learning Environment

Interdisciplinary

International

Problem-Based Learning approach

Intercultural

Intergenerational

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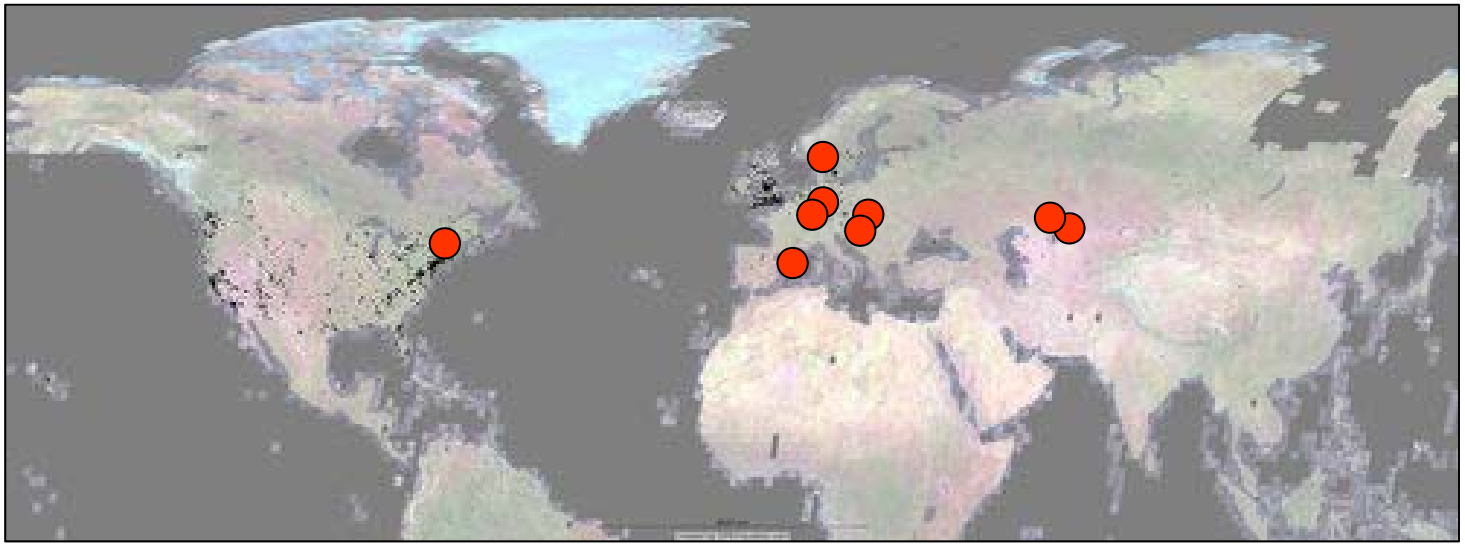
Participating Universities

- **UPC Barcelona Tech,** Barcelona, Spain
- **Delft University of Technology,** Delft, Netherlands
- **Chalmers University of Technology,** Goteborg, Sweden
- **Royal Institute of Technology, KTH**, Stockholm, Sweden
- **Graz University of Technology**, Graz, Austria
- **University of Maribor**, Maribor, Slovenia
- **Kyiv Politechnic Institute Kiev**, Ukraine
- **National University of Water Management and Nature Resourses use**, Rivne, Ukraine
- **Odessa State Academy of Refrigeration**, Odessa, Ukraine
- **Kharkov Polytechnic Institute**, Kharkov, Ukraine
- **Lviv Polytechnic**, Lviv, Ukraine
- **Kyrgyz State University of Construction, Transportation and Aschitecture**, Bishkek, Kirgizstan
- **Osh Technological University**, Osh, Kirgizstan



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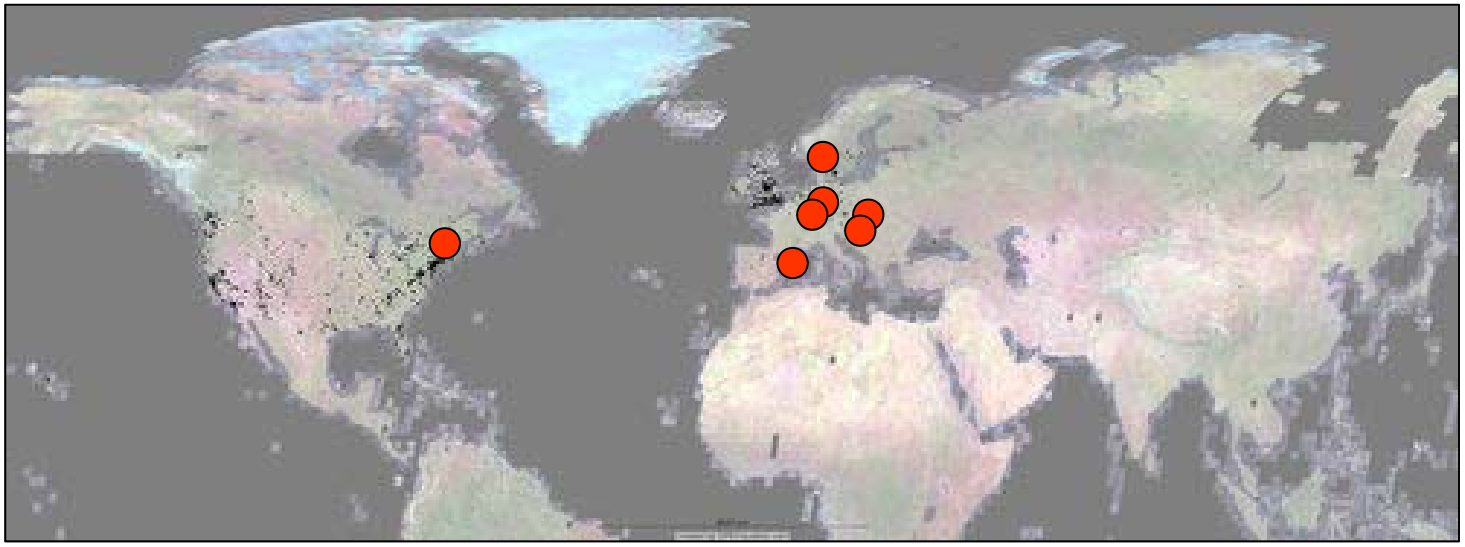
Participating Universities

- **UPC Barcelona Tech** (Master in Sustainability, Master of Environmental Engineering), Barcelona, Spain
- **Delft University of Technology** (Master in Industrial Ecology), Delft, Netherlands
- **Chalmers University of Technology** (Master in Industrial Ecology for a Sustainable Society, Master in Sustainable Chemical Processes), Goteborg, Sweden
- **Royal Institute of Technology, KTH** (Master in Sustainable Technologies), Stockholm, Sweden
- **Graz University of Technology** (Master in Sustainable Development), Graz, Austria
- **University of Maribor** (Master in Food Safety in the Agrofood Chain), Maribor, Slovenia



The Course Organisation: Students

- Total of 25-30 Master students
  - 10 students from UPC
  - 15-20 students from partner universities (3-4 from each)
- 10 CREDO PhD students

- Participation at STD = 5 ECTS = 125 h of work
  - 50 h previously (individual and group work)
  - 70+5 h at the Seminar

- For more information, visit: http://is.upc.edu/seminaris-i-jornades/seminaris/std-2013

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The Course Organisation and Colaborators

- UPC Barcelona:

Coordinator, EPSEVG, IS.UPC
Jordi Segalás Coral

&

Organisation team, IS.UPC
Gemma Tejedor, Catherine Docherty, Ana Andrés, Boris Lazzarini, Montserrat Mora

- Visiting lecturers (financed by an Erasmus Intensive Programme):

TUDelft
Karel Mulder, Linda Kamp,

TUGraz
Michael Nadorolawsky, Michael Eder,

Chalmers
TBC: John Holmberg, Magdalena Svanstrom, Oskar Englund,

KTH
Olga Kordas, Bjorn Frostell,

Universa v Mariboru
Martina Bavec, Franci Bavec,

- Collaborators (lectures, dialogues, case studies)

ENT
Marta Jofra

Node Garraf
Rafel Florenciano

Som Energia
Jaume Aliaga

Ecoserveis
Pep Puig

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Topics

1. Water sanitation and treatment
2. Decoupling in food & beverage packaging
3. Overfishing and marine ecosystems degradation
4. Sustainable mobility
5. Agroecology (Erasmus Intensive Programme)
6. Sustainable Energy Systems (IP)

- **Around 2 case studies**
  - ✓ Developed/Developing region
  - ✓ Global/Local problem

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2013 Topic: Sustainable Energy Systems

Every year, **a real & hot topic** is chosen to give context to the participants' work

The idea is to study the whole chain of energy (production, distribution and consumption) focusing on **how society can design/propose sustainable participatory ways of producing, distributing and consuming energy**.

The aim is to escape from only technological solutions (those are studied in other specific courses) and to explore whether the real sustainability changes in sustainable energy come from creativity, transdisciplinarity, systemic and critical thinking and, above all, from the **involvement of the community** in all the energy chain.

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2013 Topic: Sustainable Energy Systems

Relevant questions:

- **What are** sustainable energy systems (SES)? Production, distribution and consumption patterns.
- What is **the role of the community** in SES?
- What are the **reasons for introducing** SES? Resilience, Necessity, Ideology, …?
- What are SES in **different context** (global/local – economically rich/poor societies – vernacular/modern cultures)
- What are the **drivers and barriers** for SES?

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Schedule Overview

PHASE 1

PARTICIPANTS will work in the virtual phase on two main activities:

1. Work in local universities groups : Poster on Local Situation Analysis

2. Work in international groups: Report on Case Study

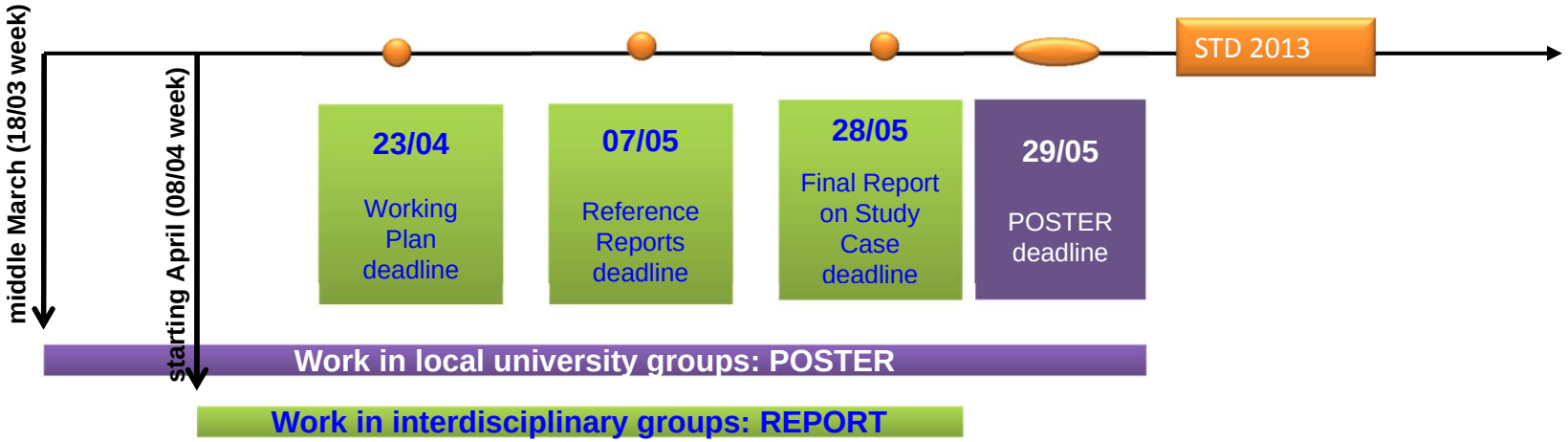
PHASE 2

FUTURE ORIENTATION STD

seminar

PHASE 3

INDIVIDUAL EVALUATION



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Phase 1. Local Situation Analysis

POSTER Assignment

You will have to develop a poster: **29/05** (instructions will be delivered during the week of 18/03)

Work in groups with students from your university (except UPC, divided into 4 groups)

- Synthesize your ideas in a poster
- Estimated individual work load: 25 h
- Questions? E-mail (both, please): std.is@upc.edu, gemma.tejedor@upc.edu

TASK

Analyse the current situation of sustainable energy systems (production, distribution and consumption) in your region/country. Answer the following questions:

•What is the current situation of sustainable energy in your region?

• Are there any local/community initiatives?

• Do you know about any co-operatives from your region, and if so, are they successful? Why or why not?

Phase 1. Case Study

You will have to develop 3 assignments (instructions will be delivered during the week of 08/04): working plan 23/04, references 07/05, report **28/05**

Work in inter-university groups of 4-5 people (group members will be assigned later)

- Two case studies: Legal framework, EU / Biomass energy, Garraf
- Estimated individual work load: 25 h
- Supervised by different universities

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Phase 2. Seminar in Vilanova

- Dates: 17-28 June
- Estimated individual work load: 70 h
- Intensive Programme Erasmus is contributing to flights (75%) and accomodation for participants during the Seminar
- Team-building among students
  - Students arrive on Sunday 16th
  - Social activities during the weekend

TASK

- Presenting posters (local groups)
- Sharing the groups analysis (international groups)
- Stakeholders interaction
- Backcasting & Scenario building
- Solutions development & discussion


Fri
Satu 12
Sun
Monday 14
Tuesday 15
Wedne 16
Thursday 17
Friday 18
STD Presentation 9:00-9:30
SDPromo winners 1 9:00-9:30
SDPromo winners 2 9:00-9:30
Lecture: "Introduction
Dialogues 1: "Artesanal fishing
sus semi-industrial
hing" (A. Garcia-
t, U. de la Coruña,
Lonxanet/ Luís
mbrosio, Probitec,
Oceans2012)
airman: Magdalena
Svanström
9:30-11:15
Introduction 9:30-10:00
Lecture: "Fishing international policies" Miquel Ortega, Oceans 2012, ENT 10:00-11:0
Lecture: "Consumption society=resources depletion" Björn Frostell 9:30-10:30
Exercise: "Let's talk about aquaculture" Lali Musoles 9:30-11:30
Coffee-break
Coffee-break
Coffee-break 15 '
Karel Mul
11:00-12:00
Presentation of Study cases by students. Conclusions by Leo Jansen 11:45-13:30
Posters presentation
10:00-13:00
Coffee-break 15 '
Dialogues 2: "Compsumption and Conservation" Raúl Garcia, WWF Spain/Leandre Serra, Gremi Majoristes de Peix
irman: Leo Jansen
11:30-13:15
Lecture: "Transitional management for sustainability" Leo Jansen
12:00-13:00
Lecture: "Fisheries sustainability and Ecosystem Approach" Jordi Lleonart, ICM
Lecture: "Sustainability assessment" Magdalena Svanström
12:00-13:00
30-15:30
Picnic and Optional Visit: La Fàbrica del Sol
16:00-18:00
Study cases methodology Leo Jans
15:30-16:3
Gemma Quílez
15:30-16:30 VS217
ience:
ne PMA"
Tarridas
30 VS217
sit: "Fish auction" Miquel Illa, Representative of Confraria Pescadors Vilanova
15:30-17:00
support from teache
till 18:00
VS 217,213,214
n and rewards
(+ STD
questionaires
recollection)
Study case 1 presentation Marta Cavallé/Enric Garriga
16:30-17:30 VS 208
Fre orking groups
18:00
VS 217,213,214
Posters avaluation
recollection
Presentations: "LAB Project" Michel Andre "SARTI Project" Joaquín del Rio
17:30-19:00
Lectures
Dialogues
Presentations
Presentations
Case studies
Visits
Group work
Assessment

Phase 3. Individual Evaluation

- Individual evaluation & feedback
- To be submitted before 6th July
- To be developed during the presential weeks
- Estimated individual work load: 5 h

TASK

• What have I learnt? (essay)
• Assessment on STD organisation, contents, etc.

Grade Breakdown

Phase 1: (50h) Virtual Phase
Poster: (25h), 20%
Case study analysis: (25h), 20%

Phase 2: (70 h) Presential Phase
Participation (discussions in lectures/dialogues/workshops) (70h), 20%
Final report + presentation, 30%
feedback: (5h,) 10%

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