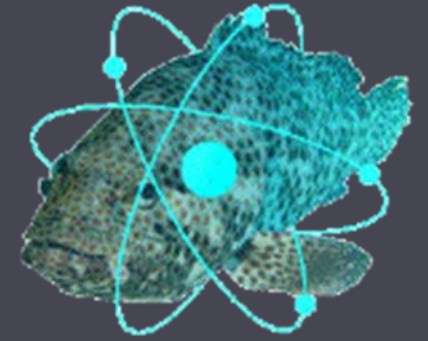




Erasmus+



Integration of soft skills, employability skills and SDG's in radiation protection: the Erasmus+ project 'train the future trainer'

S. Schreurs, W. Schroeyers, D. Mostacci, L. Tinova, J. Rodenas, S. Soares, U.W. Scherer, S. Economides, J. Camps, S. Pepin, M. Hult, G. Mulier, H. Schweickert, I. Gerardy



UHASSELT

KU LEUVEN

HE²B
ISIB

Outline

1. Introduction
2. Erasmus+ project “Blended learning in radioecology and radiation protection”
3. Erasmus+ project ”Train the future trainer/trainees”
4. Conclusion



**Integration of soft skills,
employability skills and **SDG's** in
radiation protection training**



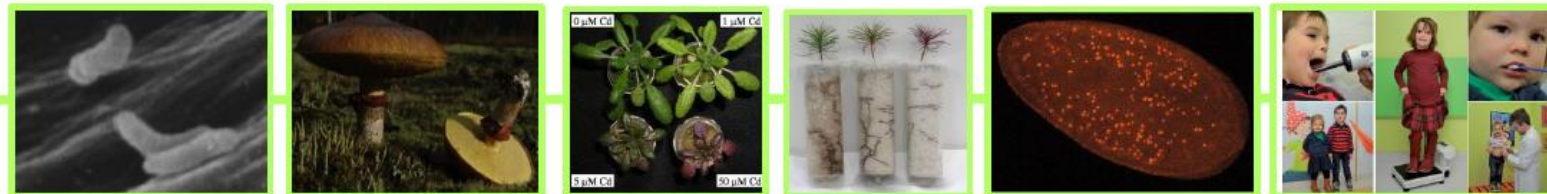
Centre for Environmental Sciences: KEY = MULTIDISCIPLINARITY

▶ Research groups

- ▶ Sciences
- ▶ Engineering & Technology
 - ▶ Research group **NuTeC**
- ▶ Economics
- ▶ Law



1. Effect of environmental stressors on organisms



2. Sustainable and Clean Technologies



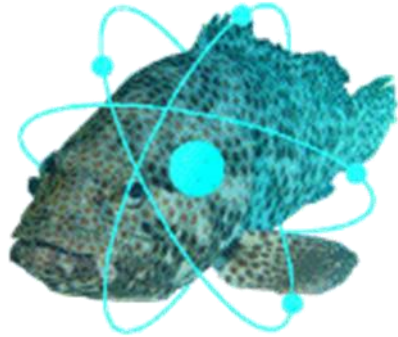
3. Biodiversity, Ecosystem Services and Climate Change



“Blended learning in radioecology and radiation protection”

▶ Erasmus + Strategic Partnership

- ▶ 01-09-2015 until 31-08-2017
- ▶ 6 e-learning modules – 6 training schools



<http://www.cherne.ntua.gr/>

▶ Integration of:

- ▶ Academic skills
- ▶ Training skills
- ▶ Soft skills and employability skills

Basics nuclear and radiation physics	Basics of measurement and dosimetry	Radiation protection
General safety principles	Basics radiochemistry	Medical applications

Practical radiation protection in medical field	Environmental radioactivity	Safe industrial applications of radiation and radionuclides
Radiochemistry	Probability Risk Assessment	Management of radioactive waste

Soft skills & Employability skills

Multi-disciplinary
cooperation

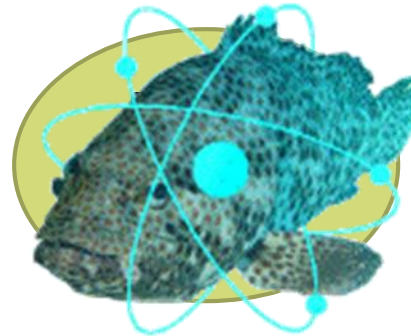
Stakeholder
awareness

Self management

Networking

Trainer skills

Ethics



Multi
languages

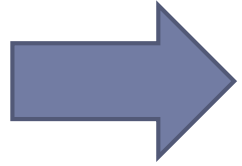
(Risk)
communi-
cation

Integrity

Communication and presentation

Integrating **Sustainable Development Goals** (UN, 2030) in radiation protection training

- ▶ Current Ba/Ma students are about 35 in 2030

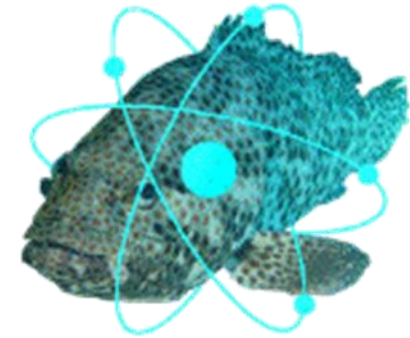
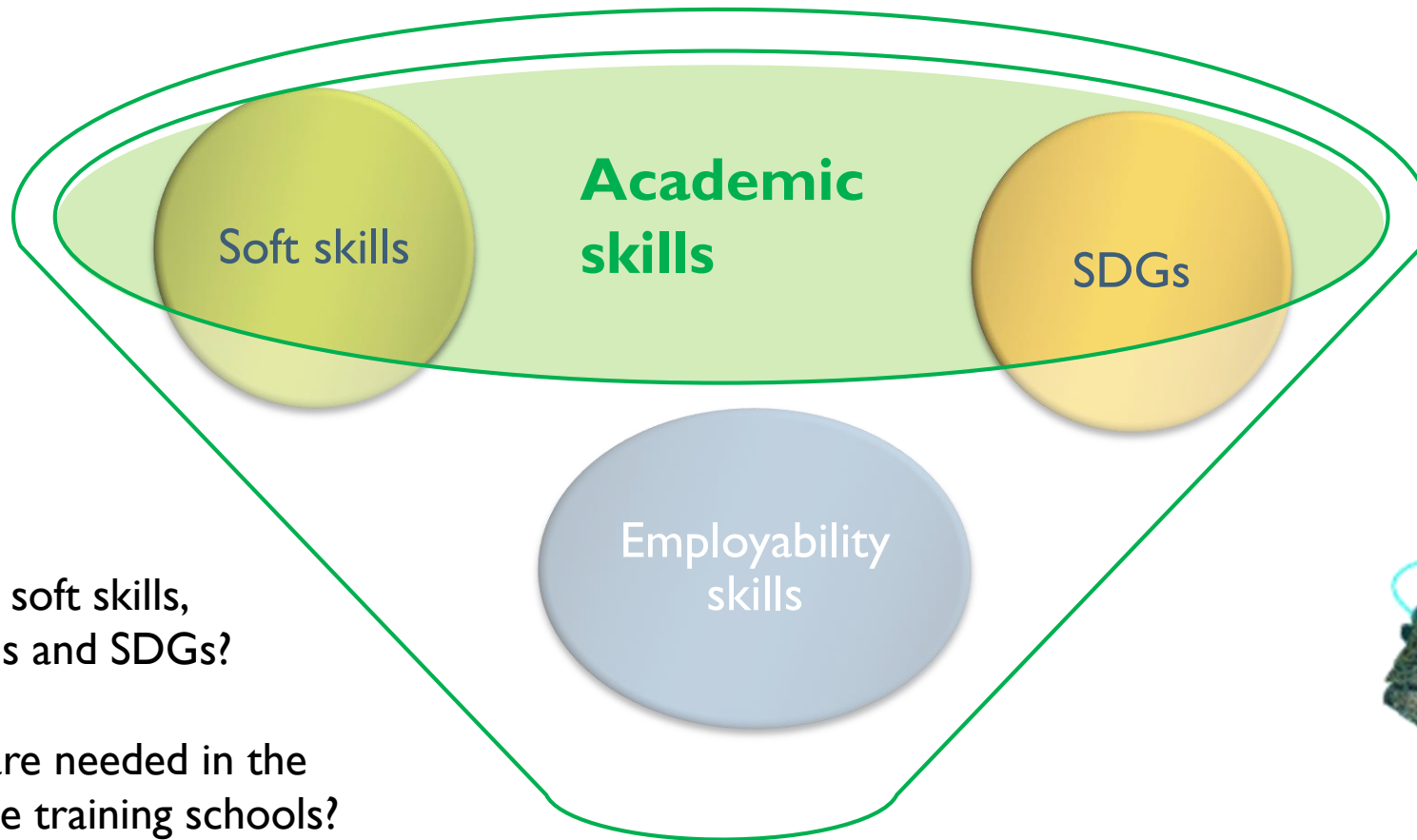


SUSTAINABLE DEVELOPMENT GOALS
17 GOALS TO TRANSFORM OUR WORLD



- 3 core elements SDGs:

1. Economic growth
2. Social inclusion
3. Environmental protection



- How to integrate soft skills, employability skills and SDGs?
- What adaptations are needed in the E-modules and the training schools?
- How to improve the blended learning process?

**New Erasmus + Strategic Partnership
“Train the future trainers/trainees”
01-10-2018 until 30-09-2020**

ERASMUS + STRATEGIC PARTNERSHIP

“Train the future trainers/trainees”

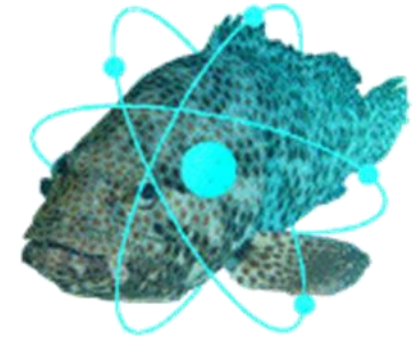
8 Partners (from the CHERNE network)

- ▶ HE2B-ISIB– **BELGIUM**
- ▶ UNIVERSITEIT HASSELT - **BELGIUM**
- ▶ HOCHSCHULE MANNHEIM - **GERMANY**
- ▶ UNIVERSITA DI BOLOGNA - **ITALY**
- ▶ UNIVERSIDADE DA BEIRA INTERIOR (Covilha)- **PORTUGAL**
- ▶ CZECH TECHNICAL UNIVERSITY IN PRAGUE – **CZECH REPUBLIC**
- ▶ UNIVERSITAT POLITECNICA DE VALENCIA - **SPAIN**
- ▶ GREEK ATOMIC ENERGY COMMISSION - **GREECE**

3 associate partners

- ▶ JRC (JRC-Geel)
- ▶ Tecnubel/ECS/Transnubel
- ▶ FANC – Belgium

Ad-hoc partners in the training activities



**Target group for training schools : bachelor and master students of each partner :
Different background in knowledge and practical skills**

Kick-off meeting + workshop @ UHasselt 10-12 okt 2018

21 participants



Visit to training centre:
ECS – Tecnubel associate partner



JRC (Geel – Ispra – Karlsruhe) :
Expertise, facilities and opportunities in
nuclear research and education

FANC : legal aspect of RPO and RPE
training (in light of new EU-BSS)

EEAE workshop
Moodles tools



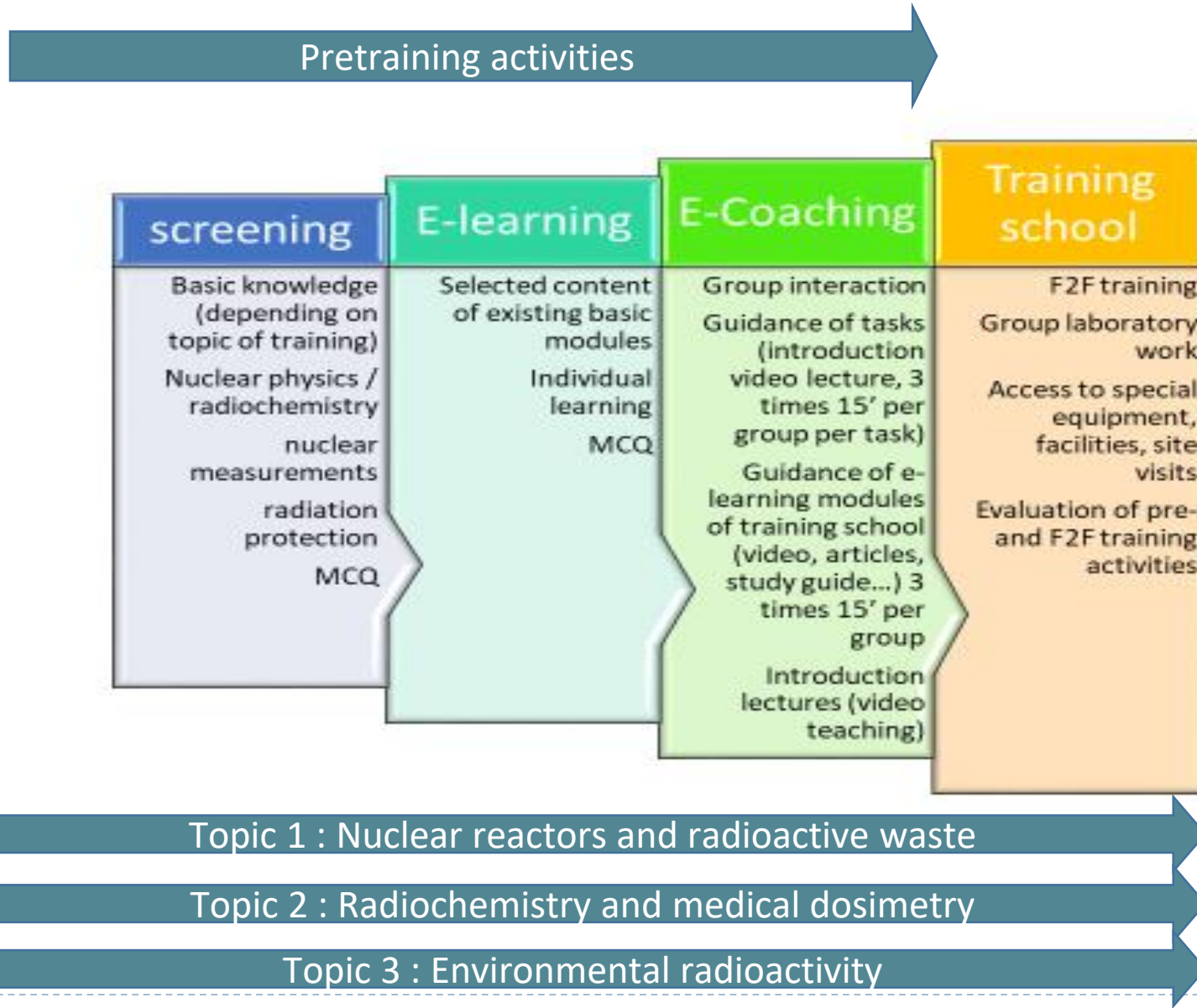
Cifal:
SDG workshop



Tips and tricks for teleteaching
Prof dr Koen Vanlaer
Hasselt University

Methodological
approach and
project activities

Optimal blended learning activities



CTU Prague 8-12/04/2019

HS Mannheim 4-8/03/2019

He2B-ISIB 6-13/03/2019

UHasselt

Integration of soft skills, employability skills and SDG's

Environmental
radioactivity

He2B/UHasselt
UBI/UPV

SDGs
Trainer skills
Stakeholder
awareness
Multi-languages

Nuclear reactors
and waste
management

CTU/
UHasselt

Ethics
Team work
Networking
Multi-languages

Radiochemistry
and medical
dosimetry

HS Mannheim/
Unibo

Risk
communication
SDGs
Trainer skills
Multi-languages



New teaching activities in action

Starting 1 month before the training school

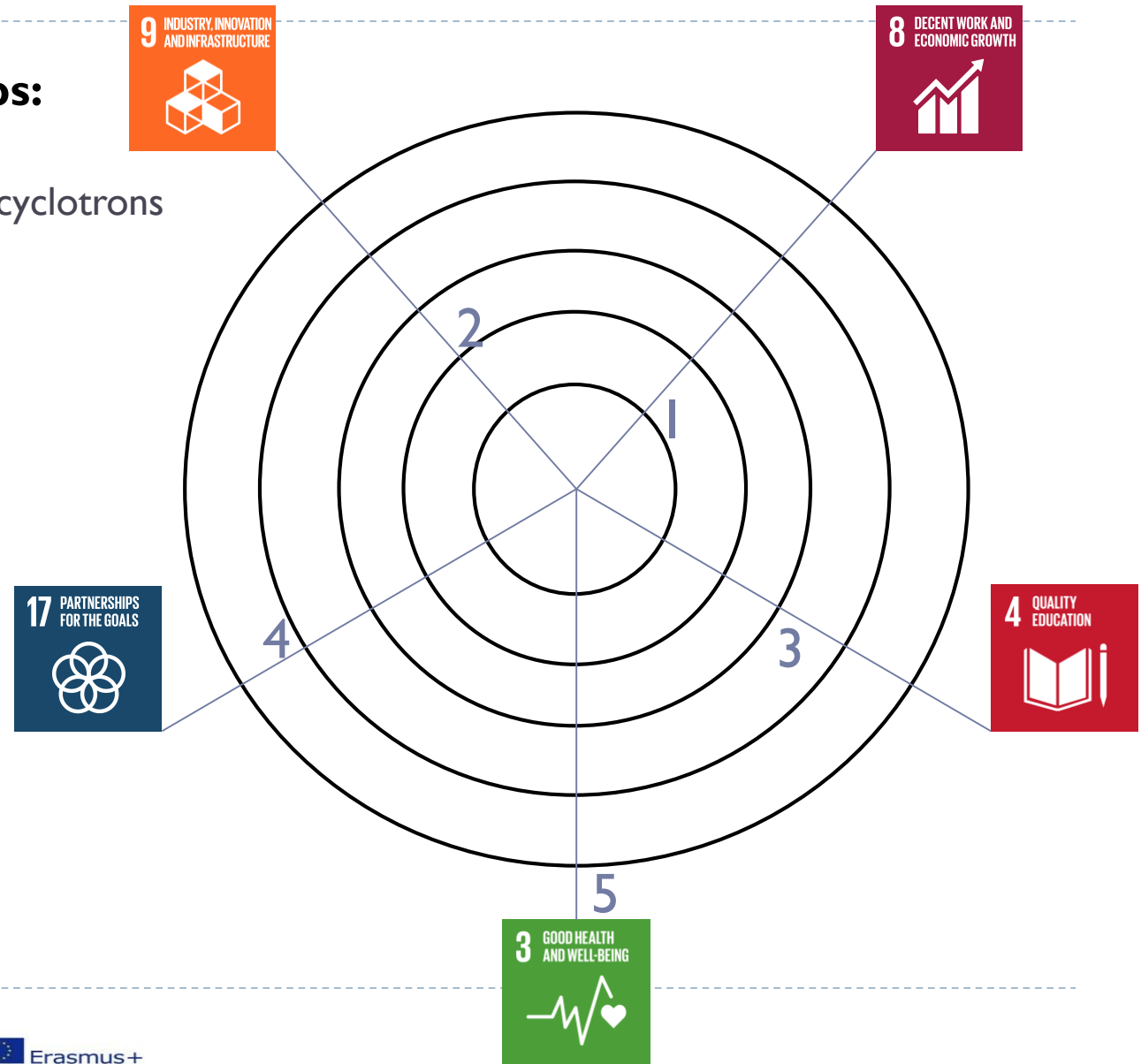
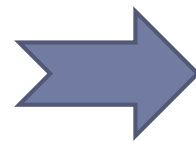
- ▶ **2 Moodle modules : self study**
 - ▶ MCQ : self assessment : 2 attempts
- ▶ **Tasks in advance in small mixed groups (3-4 students)**
 - ▶ Video lectures on SDGs
 - ▶ 3 Google meet sessions (15' per group)
 - ▶ Group negotiation / consensus – stakeholders survey
- ▶ **Training school : Team work in the same mixed groups**
 - ▶ E-modules to prepare the lab activities and background information
 - ▶ 'Trainer' activities (micro/co-teaching), role play activities, debate
 - ▶ Group task presentation : innovative presentation techniques
 - ▶ Peer assessment (Prof Dochy method)
 - ▶ 'Trainer' presentations about lab experiments
 - ▶ Final MCQ

Modules - Radiochemistry and medical dosimetry & Environmental radioactivity

SDGs Analysis



- ▶ **Student discussion groups:**
 - ▶ Example SDG case: radionuclide production with cyclotrons



Ethics round table



- ▶ **Construction of deep geological repository of spent nuclear fuel**
 - ▶ Group A: Inhabitants of municipalities
 - ▶ Group B: Political representation
 - ▶ Group C: National authority
 - ▶ Group D: Private companies

Module - Radiochemistry and medical dosimetry

Role play



- ▶ Ex. Wrong dose delivered during treatment with ^{131}I
 - ▶ “The Patient, his Physician, and her Medical Physics Expert”
 - ▶ Other participants: meet the nurse, the director of the clinic, the national authority, the press...

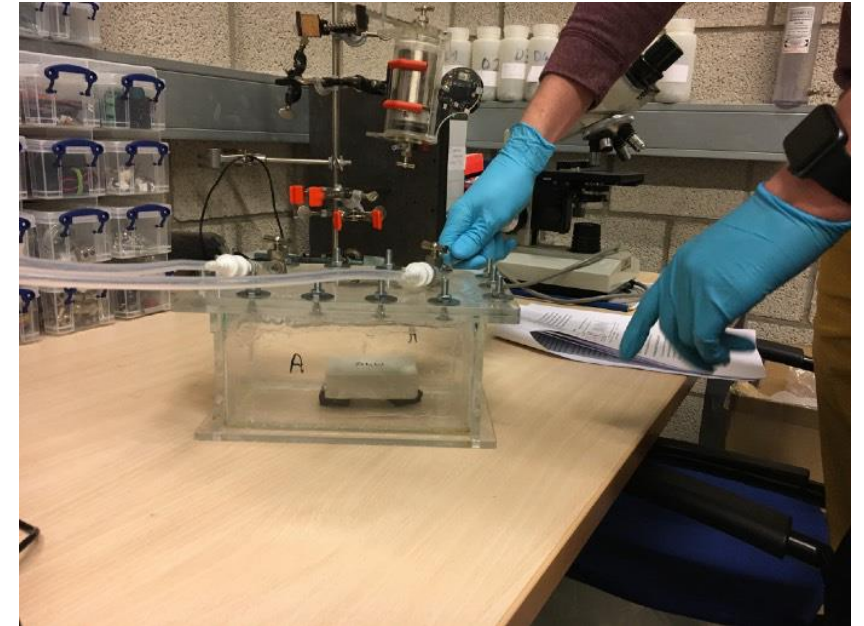


Module - Environmental radioactivity

Field trips guided by experts; lab exercises



Fieldtrip Demerbroeken



Lab exercises



Mixture of activating learning activities

- ▶ **Screening / E-modules :**

- ▶ Self determined/controlled, individual differences, constructive (levelling background gaps)

- ▶ **Group task / E-coaching :**

- ▶ Collaboration and interaction, cumulative, goal oriented

- ▶ **Face2face training school :**

- ▶ Team work, interaction, integrated tasks, trainer skills

Conclusion :

Our role as trainer in integrating and activating soft skills and SDG

Expert :

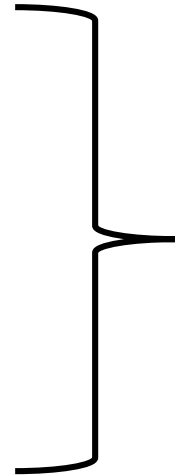
- Content, tools, MCQ screening,...

E-Coach :

- Time management
- Constructive feedback
- Increase autonomous motivation

Organiser/evaluator :

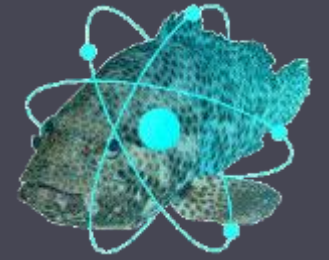
- New educational approaches : role plays, multidisciplinary tasks, micro teaching, peer assessment.....



Next challenges for the second year

Multisite synchronous teaching

Coaching on the job : preparing students for real training sessions for targeted groups



Thank you for your attention !

Acknowledgements :

All external experts during the technical visits/fieldtrips

All students and professors of the partnership

Financial support Erasmus+