



## *12<sup>th</sup> Workshop*

*on European Collaboration for Higher Education and  
Research in Nuclear Engineering & Radiological  
Protection*

*Cervia (Italy)*

*30 May- 1 June 2016*

# Brief report on the current situation of the Cherne Network

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Secretary of the Cherne Network

# What is the CHERNE Network

- Open network bringing together academic institutions involved in education in Nuclear Engineering and Radioprotection ([www.cherne.ntua.gr](http://www.cherne.ntua.gr))
- 21 partners representing 10 countries
- Created in 2005
- Allows the sharing of large experimental devices and specific competences of teaching staff
- Organizing different learning/research activities:
  - Specific course of an Institution open to students of partners (increase the teaching offer)
  - IP courses (with the support of the European Lifelong learning program)
  - Erasmus exchanges
  - Access to PhD

## *CHERNE organisation*

- ▶ *A minimal administrative organisation.*
- ▶ *Secretary elected at the annual meeting.*
  - ▶ *Helped by an advisory committee*
- ▶ *Web page through which the activities of the network are communicated:*  
[www.cherne.ntua.gr](http://www.cherne.ntua.gr)
- ▶ *Bulletin (François Tondeur)*
- ▶ *Annual Meeting to evaluate the activities of the network and discuss new proposals.*
- ▶ *Annual Workshop open to non-members.*
- ▶ *For the moment no fee is foreseen for CHERNE membership.*

## *CHERNE membership*

- *Academic institutions,*
- *research institutions,*
- *companies or*
- *individuals*
  - *are accepted as **members on presentation** by two members, including at least one European academic member.*
- *Documents for this presentation as well as the list of partners can be found at the platform*
- *According to the declaration voted during the 11<sup>th</sup> council, **Associated members** who didn't participate in any CHERNE activity during the last 5 years or were not present at any yearly CHERNE workshop during the last 5 years will not remain a member of the CHERNE network*

# MEMBERS according to the last council

## Full members

- Universidad Politécnica de **Valencia** (UPV), Valencia (Spain)
- Institut Supérieur Industriel de **Bruxelles** (ISIB) - (Belgium)
- Hasselt University, **Diepenbeek** (Belgium)
- University of Applied Sciences Aachen, **Jülich** Campus (Germany)
- Czech Technical University in **Prague** (Czech Republic)
- Facoltà d'Ingegneria, Alma Mater Studiorum - Università di **Bologna** (Italia)
- National Technical University of **Athens** (Greece)
- Aristotle University of **Thessaloniki** (Greece).
- Belarusian State University, **Minsk** (Belarus).
- Università degli Studi di **Catania** (Italia)

## Individuals

Dr. **Dieter Hennig**, Berlin (Germany)  
 Prof. **Francois Tondeur**, Brussels (Belgium)  
 Prof. **Herwig Janssens**, Diepenbeek (Belgium)

## Associated members

- Universidade de **Coimbra** (Portugal)
- Instituto Superior Tecnico (**IST**), Lisboa (Portugal)
- Nuclear Engineering Department, Politecnico di **Milano** (Italia)
- Department of Nuclear Engineering of Università degli Studi di **Palermo** (Italia)
- Department of Physics, Università degli Studi di **Messina** (Italia)
- Escola Tècnica Superior d'Enginyeria Industrial (ETSII), UPC, **Barcelona** (Spain)
- Kansas State University (KSU), Manhattan, **Kansas** (USA)
- University of Cadi Ayyad, **Marrakech** (Morocco)
- Universidade da Beira Interior (UBI), **Covilhã** (Portugal)
- Department of Physics, Università degli Studi di **Milano** (Italia)
- Universidad de **Salamanca** (Spain)

## *CHERNE activities*

- A priority is given to **teaching activities** for students of member institutions
- **Research**, organized in the framework of master/PhD thesis or in a research project has to be enhanced
- **Teaching activities** should include at least a **one-week/2 ECTS module**.
- **Practical training**, including when possible **access to large facilities**.
- **English** is used in **CHERNE activities**.
- **No cost, or very low fee**, for students coming from partner institutions
- **Cheap accommodation** for students coming from abroad.
- When possible, organisation of **CHERNE activities** will be included in **ERASMUS exchanges**.
- Partners are encouraged to sign **bilateral ERASMUS agreements**.

# Professor exchanges

7

	upv	isib	Coim	ntua	unib	Tess.	UBI	Mil1	Mil2	AcU
upv	Black	Green	Light	Light	Light	Light	Light	Light	Light	Light
Isib	Green	Black	Light	Light	Light	Light	Light	Light	Light	Green
Coimbra	Light	Light	Black	Green	Light	Light	Light	Light	Light	Light
Ntua	Light	Light	Light	Black	Light	Light	Light	Light	Light	Light
Unibo	Light	Green	Light	Light	Black	Green	Light	Light	Light	Light
Tess	Light	Light	Light	Light	Light	Black	Light	Light	Green	Light
UBI	Light	Light	Light	Light	Green	Light	Black	Light	Light	Light
Mil1	Green	Light	Light	Light	Light	Light	Light	Black	Light	Light
Mil2	Light	Light	Light	Light	Light	Light	Light	Light	Black	Light
AcUAs	Green	Light	Light	Light	Light	Light	Light	Light	Light	Black



# Professor exchanges

- *Isabelle Gerardy [ISIB → UPV, AcUAS]*
- *Patricia Vanden Cruyce [ISIB → AcUAS]*
- *Sergio Gallardo [UPV → ISIB]*
- *Domiziano Mostacci [Bologna → ISIB, Tessaloniki]*
- *Sandra Soares [UBI → Bologna]*
- *Ulrich Scherer [AcUAS → UPV]*
- *Enrico Zio [Milano → UPV]*
- *Isabel Lopes [Coimbra → NTUA]*
- *Alexandra Iannidou [Tessaloniki → Milano 2]*



# Students exchanges

9

	upv	isib	Coimbra	ntua	unibo	Milano P	Cat	AcUAs
upv	Black	White	White	White	White	White	White	Orange
Isib	Light Orange	Black	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange
Coimbra	White	White	Black	White	White	Orange	Orange	White
NTUA	Light Orange	Light Orange	Light Orange	Black	Orange	Light Orange	Light Orange	Light Orange
Unibo	White	Orange	White	White	Black	White	White	Orange
Milano p	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Black	Light Orange	Light Orange
Cat	White	White	White	White	White	White	Black	White
AcUA	Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Light Orange	Black

# Bilateral agreements

10	upv	isib	Coim	ntua	unib	Tess	UBI	Mil1	Mil2	AcU	Cata	Sal	CTU	Caty	UH
upv	Black	Green	Green	Green	Green	Light	Light	Light	Light	Green	Light	Light	Green	Light	Green
Isib	Light	Black	Light	Light	Green	Light	Light	Light	Light	Green	Light	Light	Green	Light	Green
Coim	Light	Light	Black	Green	Green	Green	Light	Green	Light	Green	Light	Green	Light	Green	Light
Ntua	Light	Light	Light	Black	Green	Light	Light	Light	Light	Light	Light	Light	Light	Light	Light
Unib	Light	Light	Light	Light	Black	Green	Green	Light	Light	Green	Light	Green	Green	Light	Green
Tess	Light	Light	Light	Light	Light	Black	Light	Light	Green	Light	Light	Light	Light	Light	Light
UBI	Light	Light	Light	Light	Light	Light	Black	Light	Light	Light	Light	Light	Light	Light	Light
Mil1	Light	Light	Light	Light	Light	Light	Light	Black	Light	Light	Light	Light	Light	Light	Light
Mil2	Light	Light	Light	Light	Light	Light	Light	Light	Black	Light	Light	Light	Light	Light	Light
AcU	Light	Light	Light	Light	Light	Light	Light	Light	Light	Black	Green	Light	Light	Light	Light
Cata	Light	Light	Light	Light	Light	Light	Light	Light	Light	Light	Black	Light	Light	Light	Light
Sal	Light	Light	Light	Light	Light	Light	Light	Light	Light	Light	Light	Black	Light	Light	Light
CTU	Light	Light	Light	Light	Light	Light	Light	Light	Light	Light	Light	Light	Black	Light	Light
Caty	Light	Light	Light	Light	Light	Light	Light	Light	Light	Light	Light	Light	Light	Black	Light
UH	Light	Light	Light	Light	Light	Light	Light	Light	Light	Light	Light	Light	Light	Light	Black

# Past Intensive Programs

- ▶ **PAN:** Practical Approach to Nuclear techniques
  - ▶ From 2002 to 2004
- ▶ **SPERANSA:** Stimulation of Practical Expertise in Radiological And Nuclear Safety
  - ▶ From 2006 to 2008
- ▶ **JUNCSS:** Jülich Nuclear Chemistry Summer School
  - ▶ From 2008 to 2010
- ▶ **ICARO:** Intensive Course on Accelerator and Reactor Operation and applications
  - ▶ From 2009 to 2011
- ▶ **SARA:** Safe Application of RAdiation and radionuclides
  - ▶ From 2012 to 2014 (2015)
- ▶ **MANTRA:** Medical Applications of Nuclear Techniques and Radiations
  - ▶ In 2014

## International Courses organised in 2015-2016

Organised without European grants; use internal funds, support from companies, regional grants

### ► XIMER

- *Measurements of Environmental Radioactivity, organised by ISIB and U Hasselt since 2009, 2 week*
- *participants: students from ISIB and U Hasselt +some others*

### ► RADAM

- Radiation Detection and Measurement; organised by AcUAs, 1 week
- Participants from ISIB, Brasil, AcUAs

### ► MARC

- Method of Applied RadioChemistry; organised by AcUAs, 1 week
- Participants from ISIB, Brasil, AcUAs

### ► IC-IRAD:

- Intensive Course on Industrial Radiography; organised by NTUA , 1 week
- Participants from AcUAs, NTUA, Cyprus

### ► Monte Carlo method applications to Laboratory, Industry and Medicine

- Organised in ISIB, students from ISIB, U Hasselt, 3 days

# New Challenge: Strategic partnership

## Blended Learning in Radiation protection and radioecology

from September 2015 to August 2017

first intermediate report for 30 June 2016

oral presentation during the NESTet congress (last week)

### Objectives:

- **Development of a blended learning program** in radiation protection and radioecology
- **Continuous education program** for people already *involved* in radiation protection
- **Acquisition of specific competences** in the nuclear field for those who were *not involved* in nuclear and radiological techniques during their studies
- **Contribution towards standardization of the knowledge across Europe** in radiation protection and safe use of radioactive materials

# Partnership:

- Academic Partners (from the CHERNE network) representing **7 countries**:
  - HAUTE ECOLE PAUL-HENRI SPAAK (ISIB) – **BELGIUM**
  - UNIVERSITEIT HASSELT (UHasselt)- **BELGIUM**
  - FACHHOCHSCHULE AACHEN (FH Aachen) - **GERMANY**
  - UNIVERSITA DI BOLOGNA (UNIBO) - **ITALY**
  - UNIVERSIDADE DE COIMBRA - **PORTUGAL**
  - CZECH TECHNICAL UNIVERSITY IN PRAGUE (CTU) – **CZECH REPUBLIC**
  - NATIONAL TECHNICAL UNIVERSITY OF ATHENS (NTUA) - **GREECE**
  - UNIVERSITAT POLITECNICA DE VALENCIA (UPV)- **SPAIN**
- Non-academic partners to add value to the partnership:
  - a research institute: NATIONAL RADIATION PROTECTION INSTITUTE (SURO) – **CZECH REPUBLIC**
  - a regulatory body: GREEK ATOMIC ENERGY COMMISSION (EEAE) - **GREECE**
- The non-academic partners have been chosen according to their competence in a specific field and their possibilities to promote the program during and after this project

## Intellectual outputs: deliverable proposed

- ▶ O1: Analysis of the present situation in radiation protection and radioecology within the European countries
  - ▶ Leader U Hasselt
  - ▶ Report will be presented during the workshop
- ▶ O2: Implementation of course modules on an e-learning platform
  - ▶ Leader EEAE
  - ▶ Some modules are in finalization phase (for winter term)
- ▶ O3: Training in Radiation Protection and Radioecology
  - ▶ Leader CTU
  - ▶ Most of the modules are already foreseen.



## O2: E-learning modules

Title	Basics nuclear and radiation physics	Basics of measurement and dosimetry	Radiation protection	General safety principles	Basics radiochemistry	Medical applications
Participants	SURO, Coimbra	NTUA, CTU	UPV, EEAE	ISIB	FHAachen, U Hasselt	Athens, (Unibo, FH Aachen) EEAE
Leader	CTU	FHAachen	SURO	UPV	ISIB	Coimbra

## O3: Training modules

Title	probability risk assessment	Environmental measurements	Safe industrial applications of radiation and radionuclides	Radio-chemistry	Radioactive waste management	Practical radiation protection in medical field
Partici-pants	ISIB	ISIB, SURO, NTUA	SURO, Coimbra, NTUA, FH Aachen	EEAE, UPV	ISIB	Coimbra, CTU, EEAE
Leader	UPV (01/2017)	UHasselt (04/2017)	CTU (09/2016)	ISIB FHAachen, (09/2016)	FHAachen, Uhasselt (11/2016)	Unibo

# First reflections about this year (1)

- ▶ About seminars, courses
  - ▶ More courses than last years (5 instead of 1)
  - ▶ Some of them can be funded by Erasmus+ next academic year (MARC, XIMER)
  - ▶ Reliability is increased → more course seems to be possible to organised each year
  - ▶ Some students seems to have more facilities to move...
- ▶ About partners
  - ▶ Some inactive partners since a (very) long period; will be excluded after 5 year of total absence of activity
  - ▶ Some want to re-engaged themselves
- ▶ About students
  - ▶ Really enthusiastic about meeting other students, acquiring new knowledge

# First reflections about this year (2)

- ▶ About tools
  - ▶ bulletins to share experiences, announcement of activities, ...
  - ▶ Platform more used
- ▶ About money
  - ▶ Mostly related to short term mobility of students (more possibilities for short term mobility of staff like STA...)
  - ▶ Difficult when no possibility of European funds
  - ▶ Need to obtain some financial support of companies but also national or regional fund

And now... it is time to work!

► Thanks for your attention

