

11<sup>th</sup> Workshop on European Collaboration for Higher Education and Research  
in Nuclear Engineering and Radiological Protection



## CHERNE 2015



### ROUND TABLE 1

#### Analysis and discussion on courses and programs proposed for CHERNE partners for next year

Moderator: Herwig Janssens

#### Topics discussed in RT1:

1. *CHERNE courses 2002-2014: Overview*
2. *CHERNE courses (proposed and organized) in 2014-15 – Proposals for 2015-16*
3. *CHERNE courses (proposed but not organized) in 2014-15 – Proposals for 2015-16*
4. *CHERNE courses: New initiatives and Proposals*
5. *Other partners - Reactions*
6. *Other partners*
7. *Remarks*

#### Annexes

1. *Template: Project Plan for CHERNE activities and other actions proposed to the network*
2. *Final Report on the 1<sup>st</sup> Intensive Course on Industrial Radiography – Athens-2014*

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#### 1. *CHERNE courses 2002-2014: Overview*

	Year	course	held in
1	2002	PAN-1	Prague
2	2003	PAN-2	Prague
3	2004	PAN-3	Mol-Brussels
4	2005	pre-SPERANSA	Praag
5	2006	SPERANSA-1	Mol-Jülich
6	2007	SPERANSA-2	Prague
7	2007	JUNCCS-1	Jülich
8	2007	RAPIX-NOCOS-1	Brussels-Diepenbeek

9	2008	SPERANSA-3	Mol-Brussels
10	2008	JUNCCS-2	Jülich
11	2008	RAPIX-NOCOS-2	Brussels-Diepenbeek
12	2009	ICARO-1	Lisbon
13	2009	JUNCCS-3	Jülich
14	2009	XIMER-1	Brussels-Diepenbeek
15	2010	ICARO-2	Palermo-Catania
16	2010	JUNCCS-4	Jülich
17	2010	MonteCarlo	Brussels
18	2011	XIMER-2	Brussels-Diepenbeek
19	2011	ICARO-3	Lisbon
20	2011	PRA	Valencia
21	2011	JUNCCS-5	Jülich
22	2012	XIMER-3	Brussels-Diepenbeek
23	2012	SARA-1	Mol-Jülich
24	2013	SARA-2	Prague
25	2013	XIMER-4	Brussels-Diepenbeek
26	2014	SARA-3	Brussels-Diepenbeek
27	2014	XIMER-5	Brussels-Diepenbeek
28	2014	MANTRA	Bologna-Catania
29	2014	RADAM	Jülich

## 2. *CHERNE courses (proposed and organized) in 2014-15*

### ➤ *Proposals for 2015-16*

**IC:** **RADIOCHEMISTRY: Methods and applications in Radiochemistry**  
**Date of the project:** 9 – 13 March 2015  
**Place(s) of the project:** UPV – Valencia (Spain)  
**Coordinator(s):** José Ródenas  
**Other partners:** Ulrich Scherer, FH Aachen Campus Jülich (Germany)  
**Number of participants:** UPV (5), BSU (10)  
**Status 2015-16:** probably organized for UPV and can be open for CHERNE partners

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**IC:** **XIMER: Measurements of Environmental Radioactivity**  
**Date of the project:** March 16th to March 27th, 2015  
**Place(s) of the project:** Diepenbeek (UHasselt-NuTeC) and Brussels (ISIB), Belgium  
**Coordinator(s):** Caroline Licour (ISIB), Luc Lievens (UHasselt)  
**Number of participants:** UHasselt (7), ISIB (5), Bologna (1)  
**Status 2015-16:** will be organised again (discussed in a regional CHERNE meeting in UHasselt with ISIB and Jülich on 17/06/15)  
11/04-22/04/2015

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**IC**  
**Date of the project:** September 29 -- October 3, 2014  
**Place of the project:** Nuclear Engineering Laboratory, School of Mechanical Engineering,  
National Technical University of Athens NTUA (Greece)  
**Coordinator (s)** Nick P. Petropoulos  
**Number of participants:** FH Aachen-Jülich (3)  
**Status 2015-16:** will be organized again *biannually* (next: 2016)  
see annex

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**IC:** **SARA: Safe Application of Radiation and radionuclides**  
**Date of the project:** 30/03/15 – 03/04/15  
**Place of the project:** CVUT, Prague, Czech Republic  
**Coordinator (s)** Lenka Thinová (CVUT), Isabelle Gérardy (ISIB)  
**Other partners** AMSU Bologna, FH Aachen-Jülich, UHasselt, UP Valencia, US Catania,  
U Salamca  
**Number of participants:** AMSU Bologna (2), FH Aachen-Jülich (2), UHasselt (2),  
UP Valencia (3), US Catania (3), U Salamanca (2), CVUT Prague (3),  
ISIB Brussels (3), Athens (1)  
**Status 2015-16:** will probably be organised again in 2016, depending on budget and  
without flight reimbursement

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**IC:** **IMAGING: Formation, Acquisition and Processing of Images in  
Nuclear Medicine Techniques**  
**Date of the project:** 4 – 8 May 2015  
**Place(s) of the project:** UPV – Valencia (Spain)  
**Coordinator(s):** José Ródenas  
**Other partners:** Isabel Lopes, Universidade de Coimbra (Portugal)  
**Status 2014-15:** organized only for UPV students (5), no interest from  
CHERNE partners  
**Status 2015-16:** probably organized for UPV and can be open for CHERNE partners

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**IC:** **Soft Computing: An Introduction to Soft Computing Methods in  
Modern Engineering: Genetic Algorithms, Neural Networks and  
Fuzzy Logic**  
**Date of the project:** 3 – 7 November 2014  
**Place(s) of the project:** UPV – Valencia (Spain)  
**Coordinator(s)** José Ródenas, UPV  
**Other partners:** Enrico Zio, Politecnico de Milano (Italy)  
**Status 2014-15:** organized only for UPV students (11) , no interest from  
CHERNE partners  
**Status 2015-16:** organized for UPV and can be open for CHERNE partners  
2-6/11/2015 or 9-13/11/2015

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**IC:** **NATURAL RADIOACTIVITY: Protection against Natural Ionizing Radiation**  
**Date of the project:** 24 – 28 November 2014  
**Place(s) of the project:** UPV – Valencia (Spain)  
**Coordinator(s):** José Ródenas, UPV  
**Other partners:** Isabelle Gerardy, Institut Supérieur Industriel de Bruxelles (ISIB, Belgium)  
**Status 2014-15:** organized only for UPV students (7), no interest from CHERNE partners  
**Status 2015-16:** organized for UPV and can be open for CHERNE partners 23-27/11/2017

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**IC:** **RADAM: Radiation Detection and Measurement**  
**Date of the project** Aug., 31<sup>st</sup> – Sep., 4<sup>th</sup>, 2015  
**Place(s) of the project** FH Aachen Campus Jülich  
**Coordinator(s)** Frieder Hoyler, FH Aachen Campus Jülich  
**Status 2014-15:** will be organised (Aug., 31<sup>st</sup> – Sep., 4<sup>th</sup>, 2015)  
**Number of participants:** ???  
**Status 2015-16:** will be organised again (September 2016)

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**IC:** **MARC: Methods of Applied Radiochemistry**  
**Date of the project** Sep 7-11, 2015  
**Place(s) of the project** FH Aachen Campus Jülich  
**Coordinator(s)** Ulrich Scherer, FH Aachen Campus Jülich  
**Other partners** C. Licour, ISIB  
**Status 2014-15:** will be organised (Sep 7-11, 2015)  
**Number of participants:** FH Aachen-Jülich (5), ISIB Bruxelles (1), Brasil (5), other (3)  
**Status 2015-16:** will be organised again (September 2016)

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**Training School:** **Training School on Reuse of NORM in Building Materials**  
**Date of the project:** 31/08/15-04/09/15  
**Place of the project:** Diepenbeek (UHasselt-NuTeC)  
**Coordinator (s)** Wouter Schroeyers, UHasselt  
**Other partners** Cost Action Network  
**Status 2014-15:** will be organized (31/08/15-04/09/15)  
**Status 2015-16:** to be discussed

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**Excursion:** **Grenoble-Tricastin-Marcoule-Cadarache**  
**Date of the project:** 20-24/11/2014  
**Place(s) of the project:** France  
**Coordinator(s):** Frieder Hoyler, FH Aachen, Domiziano Mostacci, Unibo, Bologna  
**Number of participants:** Jülich (17), Bologna (28)  
**Status 2015-16:** under discussion

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<b>IC:</b>	<b>WATER ISSUES AT NPP</b>
<b>Date of the project:</b>	10-20/02/2015
<b>Place(s) of the project:</b>	Belarusian State University (Belarus)
<b>Coordinator(s):</b>	Tatsiana Savitskaya, BSU, Iryna Kimlenka, BSU
<b>Other partners:</b>	Dzmitry Hrynshpan, Research Institute for Physical and Chemical Problems, BSU
<b>Status 2014-15</b>	organized for BSU students only, Bologna showed interest, but not finalized
<b>Status 2015-16</b>	will be organized again

### 3. *CHERNE courses (proposed but not organized) in 2014-15*

➤ *Proposals for 2015-16*

<b>Erasmus4All:</b>	<b>Blended learning in radiation protection and radioecology</b>
<b>Date of the project:</b>	01/09/14-31/08/17
<b>Place of the project:</b>	CHERNE partner institutions
<b>Coordinator (s)</b>	Isabelle Gérardy (ISIB)
<b>Other partners</b>	academic: UHasselt, Aachen-Jülich, Bologna, Coimbra, Prague, Athens, Valencia research institute: National Radiation Protection Institute, Prague regulatory body, Greek Atomic Energy Commission
<b>Status 2014-17:</b>	not approved, not organized
<b>Status 2015-17:</b>	waiting for approval

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<b>IC:</b>	<b>PRA: Probability Risk Assessment</b>
<b>Date of the project:</b>	26-30/01/2015
<b>Place(s) of the project:</b>	UPV – Valencia (Spain)
<b>Coordinator(s):</b>	Sebastián Martorell
<b>Status 2014-15</b>	not organized, no interest from CHERNE partners
<b>Status 2015-16</b>	25-29/01/2016

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<b>IC:</b>	<b>Neutron physics in the subcritical assembly</b>
<b>Place of the project:</b>	Aristotle University of Thessaloniki
<b>Coordinator (s)</b>	Stelios Stoulos
<b>Status 2014-15:</b>	not organized since the assembly is under reconstruction, to be ended in Sep 2015
<b>Status 2015-16:</b>	planned to be organized in 2015-16

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<b>IC:</b>	<b>Nuclear Analytical Techniques and Applications</b>
<b>Place of the project:</b>	Nuclear Engineering Department, National Technical University of Athens NTUA (Greece)
<b>Coordinator (s)</b>	Marios J. Anagnostakis
<b>Other partners</b>	National Center for Scientific Research Demokritos
<b>Status 2014-15:</b>	not organized
<b>Status 2015-16:</b>	not organized

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#### 4. *CHERNE courses: New initiatives and proposals*

<b>IC:</b>	<b>Monte Carlo method applications to Laboratory, Industry and Medicine</b>
<b>Date of the project:</b>	15-17/02/2016 in Diepenbeek, maybe also in Jülich in December 2015
<b>Place(s) of the project:</b>	Diepenbeek (UHasselt) (and Jülich?)
<b>Coordinator(s):</b>	Wouter Schroeyers (UH), Isabelle Gérardy (ISIB)
<b>Number of participants:</b>	???
<b>Status 2015-16:</b>	discussed in a regional CHERNE meeting in UHasselt with ISIB and Jülich on 17/06/15
<b>IC:</b>	<b>III GEANT4 International School and Parallel Computing Concepts</b>
<b>Date of the project:</b>	9-13/11/2015
<b>Place(s) of the project:</b>	Università degli Studi di Catania
<b>Coordinator(s):</b>	Enzo Bellini
<b>Number of participants:</b>	max. 50
<b>Status 2015-16:</b>	Proposed in Minsk for CHERNE members

#### 5. *Other partners - Reactions*

- Instituto Superior Tecnico (IST), **Lisboa** (Portugal)
  - Pedro Vaz: we do not intend/cannot organize or co-organize a CHERNE activity during next year
  - maybe some engagement by José Marques (private communication with Pepe)
- Nuclear Engineering Department, Politecnico di **Milano** (Italia), Enrico Zio
  - a little bit overwhelmed with activities and cannot organize anything also next year (except possibly the meeting in Milan, with Flavia Groppi).
- Universidad de **Salamanca** (Spain), Begoña Quintana
  - some ideas around a school on gamma spectrometry, including experimental- and simulation-based procedures, measurement of natural radionuclides in a variety of matrices
- Facoltà d'Ingegneria, Alma Mater Studiorum - Università di **Bologna** (Italia), Domiziano Mostacci
  - candidate for organizing the next CHERNE Workshop (together with Catania, and maybe Milano))
  - candidate to organize a field trip (together with Frieder Hoyler)

#### 6. *Other partners*

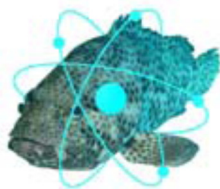
##### Associate Members

- Universidade de **Coimbra** (Portugal)
- Department of Nuclear Engineering, 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)

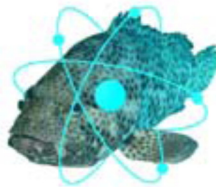
- Universidade da Beira Interior (UBI), **Covilhã** (Portugal). *Membership confirmed at the CHERNE Council.*
- Department of Physics, Università degli Studi di **Milano** (Italia). *Membership confirmed at the CHERNE Council.*

## 7. Remarks

- For the announcement of the next courses the CHERNE template 2015-16 should be used (see annex), to be included in the CHERNE Bulletin. François Tondeur has agreed to remain the Bulletin coordinator during 2015-16.
- This template should be filled in *before the beginning of September 2015* to allow the communication to the students at the beginning of the academic year (end of September) in the CHERNE Bulletin and should be send to:
  - François isib Tondeur ([tondeur@isib.be](mailto:tondeur@isib.be))
  - Isabelle isib Gerardy ([gerardy@isib.be](mailto:gerardy@isib.be))
  - Herwig tIn Janssens ([herwig.janssens@telenet.be](mailto:herwig.janssens@telenet.be))
- Well before the actual organisation of a course a separate second announcement should be send by the organisers to the partners.
- All further information concerning the projects will be distributed on the CHERNE Platform (platform coordinator: Marios Anagnostakis ([managno@nuclear.ntua.gr](mailto:managno@nuclear.ntua.gr)), with cc to Isabelle Gerardy ([gerardy@isib.be](mailto:gerardy@isib.be)))



# CHERNE 2015-16



## Project Plan for CHERNE activities and other actions proposed to the network

**Acronym/Short title of the project: xxx xxx**

<b>Time schedule for the proposal of educational activities for students (proposals not addressed to students may be introduced at any time)</b>	before September 15: the organiser fills the present form and sends it to the secretary of CHERNE, José Ródenas ( <a href="mailto:jrodenas@iqn.upv.es">jrodenas@iqn.upv.es</a> ) before September 30: received proposals are sent to all CHERNE partners by the CHERNE secretary and made available on the information platform
<b>Context</b>	This project plan is meant to inform CHERNE partners and their students about an activity organised in the framework of the CHERNE network, taking into account the objectives of CHERNE as described in the CHERNE declaration <a href="http://www.upv.es/cherne">www.upv.es/cherne</a>
<b>Definitions</b>	IC: Intensive course, at least 1 week/2 ECTS SP: strategic partnership (may include intensive programmes and other actions) IP: intensive programme, part of the actions of a SP

<b>Title of the project and acronym (if applicable)</b>	
<b>Type of the project</b>	Please fill in: SP, IP, IC, excursion, visit, internship, workshop, research, other?
<b>Main objective of the project</b>	Describe in a few lines the main objective of the project. Eventually an extensive description can be given in an annex
<b>Short description of the project</b>	
<b>Expected learning outcomes (if applicable)</b>	
<b>Date of the project</b>	
<b>Place(s) of the project</b>	
<b>Coordinator(s)</b>	Name, Institution, email
<b>Contact person (if different)</b>	Name, Institution, email
<b>Other partners</b>	Name, Institution
<b>Is the partnership still open to more partners?</b>	open / closed



<b>Intended participants Expected present studying level of participants and their specialisation (if relevant)</b>	students (Ba, Ma, PhD?), staff members, external, ...? the activity is organised for the own students, free places are open for students of CHERNE partners / or: the activity is organised for students of all CHERNE partners / or: the activity is organised for .../...
<b>Prerequisites Expected initial knowledge</b>	
<b>Intended or maximal number of participants</b>	
<b>Task force (if applicable)</b>	Name, Institution
<b>Working method, time schedule and deadlines for the organisation and for the task force</b>	Make clear here which kind of answer is expected from CHERNE members to this proposal and when.
<b>Evaluation (of participants, by participants, by organisers, ...)</b>	
<b>Reporting and dissemination (if applicable)</b>	
<b>Is the project part of an Erasmus program?</b>	
<b>ECTS or ECVET credits applicable? How many?</b>	
<b>Are any other industrial or research non CHERNE partners involved?</b>	Name, Institution
<b>Terminology</b>	CHERNE: Cooperation for Higher Education on Radiological and Nuclear Engineering other: .../...
<b>Practical organisation</b>	Accommodation : organised / not organised
<b>Costs for the students (if applicable)</b>	Travel : covered / not covered Accommodation Social events Tuition fee <b>TOTAL FEE</b>
<b>Extra information or conditions</b>	.../...
<b>Anything else</b>	.../...

Annex 1

.../...

Annex 2

.../...

ΕΘΝΙΚΟ ΜΕΤΣΟΒΙΟ ΠΟΛΥΤΕΧΝΕΙΟ

ΣΧΟΛΗ ΜΗΧΑΝΟΛΟΓΩΝ ΜΗΧΑΝΙΚΩΝ  
ΤΟΜΕΑΣ ΠΥΡΗΝΙΚΗΣ ΤΕΧΝΟΛΟΓΙΑΣ

ΕΠΙΚ. ΚΑΘΗΓΗΤΗΣ Ν.Π. ΠΕΤΡΟΠΟΥΛΟΣ  
Δρ. Μηχανολόγος Μηχανικός ΕΜΠ



NATIONAL TECHNICAL UNIVERSITY  
OF ATHENS  
SCHOOL OF MECHANICAL ENGINEERING  
DEPARTMENT OF NUCLEAR ENGINEERING

ASSIST. PROFESSOR N.P. PETROPOULOS  
Dipl. Eng. NTUA, Ph.D. NTUA

Professor José Ródenas,

Universidad Politécnica de Valencia (UPV)  
Departamento de Ingeniería Química y  
Nuclear (DIQN), Valencia (Spain),

Athens, May 28, 2015

*Re:* Final Report for the 1<sup>st</sup> Intensive Course on Industrial Radiography

Dear Professor Ródenas,

Let me please provide herewith an accounting report of the 1<sup>st</sup> Intensive Course on Industrial Radiography (IC-IRAD), which was successfully held between Sep 29 and Oct 3, 2015, at the Nuclear Engineering Department of the National Technical University of Athens (NED-NTUA). As well known, the course was an joint initiative of NED-NTUA and the CHERNE network. Detailed data on this course have been also made available at the course web site, which has been specifically prepared for the course purposes, at the following link:

<https://sites.google.com/site/ntuaradiographycourse/>

#### 1. Course history, aim and generic particulars

The aim of this one-week intensive course is to bring together students and teaching staff from higher education institutions involved in the nuclear engineering applications fields, for a 5 continuous full day (09.00-17.00) course regarding the principles of conventional (film) industrial radiography and associated radiation protection.

The usefulness of an intensive course on industrial radiography, either with or without ERASMUS or other funding support, were proposed by the Nuclear Engineering Department of the National Technical University of Athens (NED-NTUA) during the 8<sup>th</sup> CHERNE Workshop, which was hosted by NED-NTUA in GREECE, between 28 to 30 May 2012.

A second detailed discussion on the matter was further held during the 9<sup>th</sup> CHERNE Workshop, which was hosted by the Faculty of Sciences at the University of Salamanca, SPAIN, between 5 to 7 June 2013. Following these discussions, it was finally decided that such a course could be organized for the first time not later than Autumn 2014 under the name IC-IRAD and for the duration of one week only.

#### 2. Particulars of the 1<sup>st</sup> course

The course was not funded by any external source and, therefore, it was run using the personnel, the facilities and the equipment available at NED-NTUA. Registered participants were not supported financially, in any way i.e. for transportation, accommodation, per-Diem etc. It has been decided that despite the lack of funding to charge no fees to the course participants.

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✉ npetr@central.ntua.gr • npetro@nuclear.ntua.gr 🌐 <http://nuclear.ntua.gr>

The course was held for three students coming from FH Aachen, who were registered in June 2014. All lectures were given in English (the official course language). All participants received adequate course material mainly in printed form and also electronic copies of suggested studying material.

Since the level of the attending participants was sufficiently high it was decided that there was no need for an oral or written examination. Course duration and content could be unofficially considered as equivalent to 2 ECTS, nevertheless there was no official provision for ECTS or ECVET credits, since the credit system has not been yet adopted in our University for such provisional seminars.

A duly signed certificate of attendance was issued for all course participants.

Rest of the characteristics of the given lectures program and course conduct specifics may be found at the link of the course web site.

### **3. Course equipment and facilities**

Here is a basic list of the main equipment and facilities which were available for the course:

- a. X-Ray Source type ERESKO MF42 (200 kV) by GE Inspection and Sensing Technologies
- b. NOVA (Agfa) Film Processor Type: 7070/100 by GE Inspection and Sensing Technologies
- c. 4X Film Viewer 205x85 mm for Welding Film by Kowolux
- d. Digit-X Densitometer by Fidgeon Ltd
- e. Scanjet G4050 by Hewlett Packard]
- f. Image quality indicators (after DIN), lead letters and numbers, densitometer calibration film, spatial resolution specimens

In addition:

The was provided an independent and adequate classroom with all necessary audio visual means.

### **4. Course evaluation**

An evaluation of the course was held in the form of discussion during the last day. The summary conclusions are listed below coming from both the participants and the instructor:

- The course was taught by a sole instructor only. It would be advisable that more instructors should be involved in future courses.
- The time available for the course seems limited; participants expressed their suggestion of more laboratory work like radiography of random specimens provided by the participants themselves, further laboratory investigation of the penumbra effects etc.
- Participants expressed their suggestion to include radiography simulation and digital radiography in the course program.
- Participants felt that a second free afternoon would let them know Athens better.
- Participants would like to receive more information about the National Technical University of Athens and possibly visit one or two other Laboratories of the School of Mechanical Engineering according to their interests.
- The logistics of the course were quite satisfactory (web site, accommodation instructions, visa and health insurance info, Wi-Fi services, registration procedure, location, transportation means, bar and restaurant facilities, availability of the instructor for non-course guidance etc.)