



# Monthly Bulletin

This project has received funding from the Euratom research and training programme 2014-2018 under grant agreement No 661910

MARCH 1ST, 2019

ISSUE NO. 10

## In this bulletin

In this issue, we have updated the list of courses, **adding new information on pre-existing and new courses.**

**Workshops by ESARDA and a change in the dates of a KIT Course are in the focus.**

We again retrieve the suggestion that, **if you apply for support by the ENEN+ project, you should prompt the Course Providers about this request, soon at the time of being contacted.** Please **decide if you want to apply on your own or let the Course Providers apply for you, carefully avoiding duplication of applications.**

**Please, also read the ENEN+ [Mobility Manual](#) for knowing the conditions for applications and avoid rejection.**

**We had up to now more that 190 applications most of them for multiple courses.**

**Thanks for your interest in our courses !**

[Link to the course application page](#)

[Link for asking support for mobility to the ENEN+ project](#)

**PLEASE LOOK ALSO AT THE COMPLETE OFFER FOR LAST MINUTE SELECTION OF COURSES ALREADY ADVERTISED**

**NEW INFO ON COURSES BY UNIVERSIDAD POLITÉCNICA DE MADRID, CIEMAT, ENRESA, etc.**



POLITÉCNICA



GOBIERNO DE ESPAÑA

MINISTERIO DE CIENCIA, INNOVACIÓN Y UNIVERSIDADES

**Ciemat**  
Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas

## **Course on Radioactive Waste Management (in Spanish)**

### **Course Outline and Content**

This course is based on the experience of 27 previous editions organized since 1989, in collaboration between UPM and the national research center CIEMAT, with the support of the national company of radioactive waste management ENRESA. Along 35 lessons, the course depicts the general aspects of generation, treatment and conditioning of radioactive wastes, the basic Safety and Radiological Protection criteria, the detailed technical questions of the management of both low-and-intermediate-activity wastes and the high-activity level, together with the wastes generated during decommissioning and dismantling of installations, as well as the general and institutional aspects.

The course is made of the following modules:

- 1 – Generation, treatment and conditioning of wastes (7,5 hours)
- 2 – Basic safety and radiological protection criteria (10,5 hours)
- 3 – Management of very Low, Low and Intermediate specific activity level wastes (12 hours)
- 4 – Management of High specific activity level radioactive wastes (14 hours)
- 5 – Decommissioning and dismantling of nuclear installations (8,5 hours)
- 6 – General and institutional aspects (7,5 hours)

The course also includes two optional technical visits to the radioactive waste storage facility of "El Cabril" (Córdoba) and the dismantling of José Cabrera Nuclear Power Plant (Zorita, Guadalajara).

Detailed Learning Outcomes are reported at [this link](#)

#### **Requested Background**

The course is designed for Master and Postgraduate level students. It is integrated in the UPM Master on Nuclear Science and Technology.

#### **Teachers**

Director: Prof. Eduardo Gallego (UPM)

Researchers and experts in each field, belonging to the different sectors and institutions involved in radioactive waste management in Spain: ENRESA, CIEMAT, the Spanish Nuclear Safety Council (CSN), the UPM and the industry.

#### **Language**

The course language is Spanish

#### **Method of Delivery**

In presence lectures; detailed schedule available upon request.

**External participants can follow lectures by streaming.**

#### **Diploma**

To get the diploma, students must attend 80% of the lectures minimum and prepare a short written report.

**Date of delivery:** 7 March – 21 May 2019

**Deadline for registration:** Monday 4 March.



**POLITÉCNICA**

#### **Course on Nuclear Technology (in English, possibility of delivery in compact form)**

#### **Course Outline and Content**

Nuclear Technology provides the fundamental description of the science and technology involved in the operation of a nuclear reactor. After a short introduction to the nuclear plants, the subject continues with the basic notions of neutronics and thermal hydraulics. Then, a deep view of the components, systems and operation of a nuclear light water reactor is provided, both PWR and BWR. Once the basic concepts about a reactor are build, the course begin with more advanced topics. The first of them is an introduction to Nuclear Safety, with a short view on the historical accidents (Three Mile Island, Chernobyl and Fukushima). To finish the subject, the students get a brief knowledge about Generation III/III+ and IV reactors. Modular reactors.

The course is made of the following lectures:

- 1 – Introduction to Nuclear Power Plants (4 hours)
- 2 – Neutronics and Thermal-Hydraulics Fundamentals (4 hours)
- 3 – Light Water Reactors (10 hours)
- 4 – Introduction to Nuclear Safety (4 hours)
- 5 – Generation III/III+ and IV reactors. Modular reactors (8 hours)

Detailed Learning Outcomes are reported at [this link](#)

#### **Requested Background**

The course is designed for last year bachelor or postgraduate level students.

#### **Teachers**

Emilio Minguez (UPM), Gonzalo Jimenez (UPM)

#### **Method of Delivery**

In presence and in streaming lectures. On request, lectures can be followed by external students.

**Date of availability:** March - June 2019

**COMING  
SOON  
COURSES**



## 1-day Workshop Safeguarding Nuclear Fuel Cycle

May 13, 2019  
Stresa (Italy)

### Workshop: Safeguarding Nuclear Fuel Cycle

The goal of this 1-day workshop is to setup a generic safeguards system for a case study of a country with a given nuclear fuel cycle.

The workshop starts with two presentations on nuclear safeguards and on the nuclear fuel cycle in order to give a common starting point for all participants. The presentations will focus on topics that will be used for the rest of the workshop.

A case study will be further presented to the participants, describing the characteristics of a fictional country with a well-described nuclear fuel cycle. The participants will be divided in two groups and each group will develop an acquisition path analysis based on the information provided. The results will be discussed among the two groups.

Following the discussion, one group (so-called Inspectors) will have the task to develop a safeguards approach based on the acquisition path analysis, whereas the second group (so-called Proliferators) will try and develop acquisition paths to obtain material for a nuclear weapon without being detected.

Each group will finally present the results of their analysis and a group discussion is foreseen.

[More information](#)

## 1-day Workshop State-level Safeguards Approaches

May 17, 2019  
Stresa (Italy)

### Workshop: State-level Safeguards Approaches

In implementing safeguards, the International Atomic Energy Agency (IAEA) considers a State's nuclear and nuclear-related activities and capabilities as a whole, within the scope of the State's safeguards agreement. For each State, a customized State-level safeguards approach is developed on the basis of a structured, technical method and by systematically taking into account the State specific factors.


The workshop presents an overview on the general processes to develop and implement State-level safeguards approaches, starting with the collection and evaluation of information, and to plan, conduct safeguards activities. Case studies using fictitious model states will illustrate the implementation of safeguards in States with different State specific factors.

[More information](#)

### CONTACT

For questions and further information, please contact: Riccardo Rossa  
Scientific collaborator Nuclear Science and Technology Studies at SCK•CEN  
Email: [riccardo.rossa@sckcen.be](mailto:riccardo.rossa@sckcen.be)

**THE FULL CALENDAR  
OF BNEN COURSES  
HAS BEEN  
PUBLISHED:  
SPEED UP TO  
RESERVE!**

 Belgian Nuclear higher Education Network



### THE BELGIAN NUCLEAR EDUCATION NETWORK

**[BNEN Courses: the full available programme proposed for ANNETTE in a modular fashion \(ACADEMIC CALENDAR\)](#)**

[Advanced nuclear reactor physics and technology \(3 ECTS\) \(11-15 March 2019\)](#)

[Advanced nuclear materials \(3 ECTS\) \(18-22 March 2019\)](#)

[Advanced courses of the nuclear fuel cycle \(3 ECTS\) \(25-29 March 2019\)](#)

[Nuclear and radiological risk governance \(3 ECTS\) \(1-5 April 2019\)](#)

**STILL COLLECTING  
APPLICATIONS FOR  
FPS@KIT SCHOOL**



### **[COURSES OFFERED BY THE FRAMATOME PROFESSIONAL SCHOOL \(FPS\) AT KIT FOR ANNETTE](#)**

- [Design Basis Accidents for Light Water Reactors and Numerical Simulation Tools \(May 2019\)](#)
- [Reactor Exercises \(July 2019\)](#)
- [Design of Pipelines against Earthquake Loads \(on demand\)](#)

	<p><b>AN EXTENDED OFFER BY <i>FPS@KIT</i> FOR ANNETTE (TENS OF PLACES)</b></p> <ul style="list-style-type: none"> <li>Reactor physics calculations with deterministic methods (<a href="#">link</a>);</li> <li>Beyond-design accidents, core-melt accidents (<a href="#">link</a>);</li> <li>Thermohydraulic Stability Analysis (<a href="#">link</a>);</li> <li>Radiolytic Gas Management in Boiling Water Reactors (<a href="#">link</a>);</li> <li>Stress Analysis (<a href="#">link</a>);</li> <li>Light Water Reactor (LWR) core design and fuel management (<a href="#">link</a>);</li> <li>Light Water Reactor (LWR) core feedback and transient response (<a href="#">link</a>).</li> </ul> <p>For a general description of course conditions, look at this <a href="#">link</a>.</p>
<p><b>CEA-INSTN COURSES WITH NEW DATES</b></p>	 <p><b>Courses by CEA INSTN (FREE of CHARGE FOR ANNETTE)</b></p> <ul style="list-style-type: none"> <li><b>Neutronics for light water reactors</b> (11-15 March 2019 and 18-22 March 2019) <a href="#">Click here for the Learning Outcomes</a></li> </ul>
<p><b>INFORMATION ON RECENTLY ADVERTISED COURSES</b></p>	 <p><b>REMINDERS</b></p>
<p><b><a href="#">Principles of Radiation Protection. International Framework. Regulatory Control (e-learning)</a></b></p>	  <p><b>Lecturers:</b>  Mrs. Gabriela Rosca-Fartat  Mr. Gabriel Stanescu, PhD  "Horia Hulubei" National Institute for Physics and Nuclear Engineering (IFIN – HH)  Nuclear Training Centre  30 Reactorului, RO-077125, Bucharest-Magurele, Romania</p> <p><b>Method of Delivery:</b> Asynchronous e-learning.  <b>Final Examination:</b> multiple-choice test</p> <p>In order to apply for this course, please use the application form on the ENEN website:  <a href="#">ANNETTE application page</a></p>
<p><b><a href="#">SINGLE AND TWO-PHASE THERMAL-HYDRAULICS - for nuclear applications</a></b></p> <p>(e-learning)</p>	  <p><b><a href="#">SINGLE AND TWO-PHASE THERMAL-HYDRAULICS</a></b></p> <p><i>The theoretical lectures and exercise material are already posted. Videos fully available. Contact: <a href="mailto:walter.ambrosini@unipi.it">walter.ambrosini@unipi.it</a></i></p>
<p><b><a href="#">MASSIVE OPEN ONLINE COURSE ON NUCLEAR SAFETY CULTURE</a></b></p> <p><b>By TECNATOM and UNED</b></p>	 <p><b>MOOC (Massive Open Online Course):</b>  <b><a href="#">Introducing safety culture and its application to the nuclear field</a></b>  A completely online, free, international course. General information about the MOOC is available in the link above.  30 h of participant work – 1ECTS  Divided in 4 independent NOOCs (Nano Open Online Courses):  <b><a href="#">NOOC I. What is safety culture?</a></b>  <b><a href="#">NOOC II. Understanding Nuclear Safety Culture</a></b>  <b><a href="#">NOOC III. Developing leadership for safety</a></b>  <b><a href="#">NOOC IV. Refreshing Nuclear Basics</a></b></p>

**Open now the free registration, by clicking on each NOOC above.**

We are actually in the production process. We will announce the starting date shortly. If you want to receive information about the MOOC/NOOCs, please fill the form [here](#). We highly thank those advertising this initiative within the nuclear sector, but as well towards professionals from other industries (specially high-risk industries), as well as master students of nuclear and other technical studies, to gather a varied audience to enhance global networking and a collaborative learning experience. This course will allow a research study and its dissemination is crucial to achieve massive participation from the main target groups.



## DISSEMINATION ACTIVITIES

[Presenting the MOOC course for ANNETTE project in the international congress "Learning with MOOCs 2018" \(LWMOOCs V\)](#)

**UNED** has presented the MOOC course for ANNETTE project "Introducing safety culture and its application to the nuclear field" in the international congress "[Learning with MOOCs 2018](#)" (LWMOOCs V), celebrated in Madrid 26th-28th September in UNED.

***Innovative social approach in the nuclear sector: a MOOC in Nuclear Safety Culture within H2020 ANNETTE project***

[Mercedes Alonso-Ramos](#)<sup>1</sup>, [Ángeles Sánchez-Elvira](#)<sup>1</sup>, [Javier Sanz Gozalo](#)<sup>1</sup>, [David Abarca Ahijado](#)<sup>2</sup>, [Álvaro Pablo Muñoz Rodrigo](#)<sup>2</sup>, [Fernando González González](#)<sup>2</sup>, [Tiberio Feliz Murias](#)<sup>1</sup>, [Manuel Alonso Castro Gil](#)<sup>1</sup>

<sup>1</sup>UNED, Spain; <sup>2</sup>Tecnatom, Spain

The audience talked about the big expectation on what a MOOC of this type in the nuclear sector could attain regarding specially the collaborative learning environment and the interaction between very different target groups: the nuclear sector professionals as well as master students and professionals from other industries.

[INOOC in EADTU OOFHEC 2018 in Aarhus presenting our MOOC within the Horizon 2020 ANNETTE project](#)

**UNED** has participated in "[The Online, Open and Flexible Higher Education Conference](#)" – [OOFHEC2018. Blended and online Learning: Changing the Educational Landscape](#), organized by the [EADTU](#) (European Association of Distance Teaching Universities). The conference was hosted by Aarhus University, Denmark.

In the Conference, our work in the field of nuclear E&T innovation was presented, and more specifically our current development of the MOOC on Nuclear Safety Culture within [ANNETTE project](#) in collaboration with [TECNATOM](#).

***Fostering innovation in the nuclear ET sector through e-learning and MOOCs within the Horizon 2020 ANNETTE project***

[Alonso Ramos, M.](#), [Sánchez-Elvira Paniagua, A.](#), [Sanz Gozalo, J.](#), [Abarca Ahijado, D.](#), [González González, F.](#), [Feliz Murias, T.](#) & [Castro Alonso, M.](#)

UNED has played an important role in the introduction of eLearning to guide the innovation in the project. Our commitment to the project is centred in the MOOC "Introducing Nuclear Safety and its application to the nuclear field". Nuclear Safety Culture (NSC) is a multidisciplinary discipline, the first driver for all nuclear organizations, and a must when teaching on any subject in the nuclear field. The MOOC, built on the expertise in NSC of the engineering company Tecnatom, and guided by the know-how of UNED in open, online learning and MOOCs, is then part of an innovative offer for advanced education, contributing as well to a horizontal communication between stakeholders in the nuclear sector. Also, the possibility to be followed by anyone anywhere opens the scope of the participants to professionals from other industrial sectors, and to talented young students or professionals. Considering the number of people retiring and the difficulties to attract talent to the nuclear sector this networking activity becomes one of the strategic objectives of the MOOC.

European Nuclear Education Network Association



Tel: +32 484 20 15 04  
E-mail: [secretariat@enen.eu](mailto:secretariat@enen.eu)

### GENERAL INFO:

Web page of ANNETTE Courses

<http://www.enen.eu/en/projects/annette/annette-project-courses1.html>

Web page for course application:

<http://www.enen.eu/en/projects/annette/eoi1.html>



**LINK TO COURSE LIST**



**LINK TO THE APPLICATION FORM**

Web page concerning the grants of the ENEN+ project

<https://plus.enen.eu/grants/>

**PLEASE READ CAREFULLY THE INSTRUCTIONS TO APPLY FOR GRANTS !**