MASTER’S DEGREE APPLIED TO RADIATION PROTECTION IN RADIOACTIVE AND NUCLEAR FACILITIES

Presented by:
Patricia Mayo
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PRESENTATION OF THE MASTER

DIRECTION AND COORDINATION

COLLABORATING ENTITIES
## CHARACTERISTICS OF THE MASTER COURSE

**Contents:** modular structure (65 ECTS):

- General Module
- Specific Module in Radioactive Facilities
- Specific Module in Nuclear and Fuel Cycle Facilities
- Advanced Module

The master **contents are based in the theoretical and practical training required** for the positions of **Head of Radiation Protection Units (CSN IS-03).**

**Mode:** Blended Learning

**Qualification:** Qualification recognised by the **Polytechnic University of Valencia** and the collaborating entities.

**6th Course of the Master:**
Start: October 3rd 2016; End: July 14th 2017
PRESENTATION OF THE MASTER

LECTURERS

- General module: David Reinado, Alegría Montoro, Juan Campayo, Javier Rivero, Guillermo Baeza, José Peiró, Belén Juste, Gumersindo Verdú, Trinidad Cortina, Sergio Gallardo, Rafael Miró, Luisa Ballesteros, Josefina Ortiz, Patricia Mayo.
- Specific module: Radioactive facilities: Gumersindo Verdú, Juan Campayo, Trinidad Cortina, Guillermo Baeza, Jose Antonio Madrid, Javier Rivero, Belén Juste, Sergio Gallardo, Patricia Mayo, Rafael Miró, Patricia Mayo.
- Specific module: Nuclear and fuel cycle facilities: Sergio Gallardo, Rafael Miró, Ramiro Fragio, Gumersindo Verdú, Jose Peiró, Enrique Pedrón, Sergi Margalef, Juan Campayo, Patricia Mayo.
- Advanced module: Rafael Miró, Javier Tenajas, Josefina Ortiz, Juan Campayo, Alfredo Mozas, Gumersindo Verdú, Ramiro Fragio, Sergi Margalef, Luisa Ballesteros, Josefina Ortiz, Borja Bravo, Patricia Mayo.

GENERAL COORDINATOR

Patricia Mayo

DIRECTOR: Gumersindo Verdú

TECHNICAL COORDINATORS:

- General Module: Sergio Gallardo
- Radioactive Facilities Module: Juan Campayo
- Nuclear Facilities Module: Rafael Miró
- Advanced Module: Gumersindo Verdú

LOGISTIC COORDINATORS:

- Mónica Martínez, MªLucía Ferreres

E-LEARNING PLATFORM COORDINATOR:

- Javier Martínez

CO-DIRECTOR: Juan Campayo
PRESENTATION OF THE MASTER

6th COURSE OF THE MASTER IN RADIATION PROTECTION

- General Module
- Radioactive Installations Module
- Nuclear Installations Module
- Advanced Module
- Policonecta sessions planned: attendance or remote
- Practical sessions at specific Installations, seminar prior to exam and final exam
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GENERAL MODULE

• Advanced Radiation Physics.
• Detection and Measurement of Ionising Radiation.
• Biological Effects of Ionising Radiation.
• Radiation Dosimetry.
• General Radiological Protection.
• Operational Radiological Protection.
• Regulatory Contents.
• Waste Management.
• Radioactive Material Transport.
• Practical Sessions at specific facilities based on General Module contents (Practical exercises, demonstrations and visits to facilities)
SPECIFIC MODULE: RADIOACTIVE FACILITIES (INDUSTRIAL, MEDICAL AND RESEARCH)

- Industrial Installations.
- Nuclear Medicine Installations.
- Radiotherapy Installations.
- Radiodiagnosis Installations.
- Research Installations.
- Practical Sessions at specific facilities based on Radioactive Installations Module contents (Practical exercises, demonstrations and visits to facilities)
SPECIFIC MODULE:
NUCLEAR AND FUEL CYCLE FACILITIES

- General Characteristics of Nuclear and Fuel Cycle Installations.
- Safety at Nuclear and Fuel Cycle Installations.
- Operational Radiological Protection.
- Specific Regulatory.
- Practical Sessions at specific facilities based on Module on Nuclear and Fuel Cycle Installations contents (Practical exercises, demonstrations and visits to facilities)
CONTENTS

ADVANCED MODULE

• Calculation of Shielding using Advanced Software.
• Internal Dosimetry.
• Environmental Issues. Measurement of Radioactivity.
• Natural Radioactivity: NORM.
• Radiological and Nuclear Emergencies.
• Atmospheric Dispersal (advanced level).
• ALARA at Nuclear Installations.
• Decomissiing of Nuclear Installations.
• Practical Sessions at specific facilities based on Advanced Module contents (Practical exercises, demonstrations and visits to facilities)
• Project work (End of Master Course).
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## EVALUATION STRUCTURE

### MODULE

#### E-LEARNING CONTENTS (Online Platform: POLIFORMAT)

**AREA**

- Follow multimedia content and complementary material.
- Participation in Forums.
- Mandatory test and exercises.
- Mandatory attendance and participation in Policonecta sessions (review and online exam).

#### CLASSROOM SESSIONS:

- Practical sessions.
- Review end module session
- Exam module
Bienvenidos al MÓDULO GENERAL de los títulos MÁSTER EN PROTECCIÓN RADIOLÓGICA EN INSTALACIONES RADIOACTIVAS Y NUCLEARES, DIPLOMA DE ESPECIALIZACIÓN EN PROTECCIÓN RADIOLÓGICA EN INSTALACIONES RADIOACTIVAS y DIPLOMA DE ESPECIALIZACIÓN EN PROTECCIÓN RADIOLÓGICA EN INSTALACIONES NUCLEARES, acreditado por la Universidad Politécnica de Valencia en materia de Protección Radiológica junto a las entidades colaboradoras.

En el menú de la izquierda de la pantalla a través de distintos pestañas puedes acceder a los Anuncios relacionados con el curso, el Calendario de actividades programadas, ver el Programa completo del curso, los distintos Contenidos que lo forman, Recursos adicionales de material complementario, Exámenes para la realización de ejercicios y autoevaluaciones, Fórmulas de resolución de dudas, etc.

En la parte derecha se muestran los últimos anuncios, los eventos próximos en el calendario, y los mensajes nuevos que recibas por correo interno o a través de los foros de dudas...

Una vez iniciada la parte superior del MÓDULO GENERAL, es obligatoria la asistencia a unas jornadas presenciales consistentes en prácticas, seminario, y examen de aptitud. Recomendamos estar atentos a la información actualizada que se enviará de estos, en cuanto a fechas, lugar y contenido a través de Anuncios.

El profesorado que participa en la impartición del curso pertenece a las siguientes entidades:
**E-LEARNING TOOLS**

**POLIMEDIA**: Multimedia Contents

**POLICONECTA**: Remote Classes

**USE OF SOFTWARE**: Tutorial
E-LEARNING TOOLS

FOLLOWING OF MASTER VIA POLIFORMAT

Use of Master Tools

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Average Scoring of Activities

Resources, 38.7% (4606)
- Programme, 3.2% (377)
- Internal Mail, 6.7% (793)
- Contents, 11.9% (1413)
- Exams, 25.6% (3045)
- Forums, 14.0% (1664)
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EXPERIENCE OBTAINED IN THE MASTER

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- Technical or scientific background (engineers (mainly industrial), physicists..)
On average, only 40% of the students are from Valencia (and this percentage has been lower in last courses). **30% of students are from Latin America, and another 30% from other regions of Spain.**
As an average, **most of the students are employed**
Between 2012 and 2015, the percentage of unemployed participants was higher.
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CONCLUSIONS

• **Master’s approach:**

  **Modality:** Blended learning: Online + classroom contents

  ✓ Professional experts from the collaborating institutions participate in the master so their knowledge transferred to theoretical and practical approach is essential.

  ✓ Students can develop their Project work (End of Master Course) with the collaborating entities → higher interaction with the contents and

  ✓ Technical background: Most of the students are Engineers, Physicists, Chemists..

✓ Location: 30% of students are from Latin America, and another 30% from other regions of Spain.

• **Future perspectives:**

  ✓ 7th course of the UPV’s Master’s Degree in Radiation Protection in Radioactive and Nuclear Facilities will start on 2 October 2017 and end on July 2018.

  ✓ The possibility to improve and adapt of this master to other contexts to be available internationally
Within the scope of **Horizon 2020**, at the end of 2014 a proposal was carried out by a consortium of European companies, led by the **Polytechnic University of Valencia** with Titania (GDES), to the **European Commission** through the **Euratom Fission Program**, within the scope of **Horizon 2020**.

It is expected to carry out a new and improved proposal through new related european programs.

**AIMS:**

- Contents developed focused on the figure of Radiation Protection Expert (RPE), following the Directive 2013/59 / EURATOM.

- Promote the mobility of professionals in the field of RP and Nuclear Safety.

- Contribute to collaborative networks that include all public and private organizations.

- Development of knowledge and skills in the EU.

The **partner entities** that participated in the last proposal were universities, research institutes, technology and education platforms, industrial, sanitary, and nuclear entities, from Spain (UPV and Titania), Lithuania (LEI), France (INSTN), United Kingdom (UB and UCLAN), Germany (TUM), Portugal (IST-ID), and Czech Republic (CTU).
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Thank you very much!

Presented by:
Patricia Mayo