



# Erasmus Mundus Joint Master Degrees Nuclear Engineering

With the support of the  
Erasmus+ Programme  
of the European Union



## Safe and Reliable Nuclear Applications (SARENA)

▲ This programme aims to develop scientific, technical and management skills enabling engineers to work in all domains related to nuclear energy and applications with a strong international culture. It addresses the important issues of safe management of radioactive waste and installations dismantlement and decommissioning. The common denominator of the SARENA programme is nuclear safety.

### CURRICULUM

The programme proposes two different tracks:

1. Radioactive Waste Management and Decommissioning (RWMD)
2. Nuclear Reactors Operation and Safety (NROS)

#### 1<sup>st</sup> Semester (30 ECTS)

##### France-IMT Atlantique

- > Physics of ionizing radiations
- > Nuclear modeling
- > Technologies in nuclear reactors
- > Management
- > French language and culture
- > Entrepreneurship
- > Neutron physics
- > Radiation detection

#### 2<sup>nd</sup> Semester (30 ECTS)

##### Spain-UPM Madrid

- > Radiochemistry
- > Radioactive waste management
- > Environmental radiological impact
- > Nuclear safety
- > Partitioning and transmutation of nuclear waste

##### Finland-LUT Lappeenranta

- > Computational nuclear thermal hydraulics
- > Turbulence models
- > Nuclear power plant engineering
- > Nuclear reactor physics analyses

#### 3<sup>rd</sup> Semester (30 ECTS)

##### France-IMT Atlantique

- > Waste conditioning and storage
- > Dismantlement and decommissioning of nuclear installations
- > Geological disposal
- > Sustainability and safety management

##### Slovenia-UL Ljubjana

- > Physics of fission reactors
- > Experimental reactor physics
- > Materials in nuclear engineering
- > Nuclear safety

#### 4<sup>th</sup> Semester (30 ECTS)

##### Master thesis

6 months  
internship  
in company  
or institution

100 % taught in English

6 month internship in a company or lab

Erasmus Mundus full scholarships



**IMT Atlantique**  
Bretagne-Pays de la Loire  
Ecole Mines-Télécom



#Sustainability  
#NuclearSafety  
#WasteManagement  
#Decommissioning  
#NuclearTechnology  
#Dismantlement



## CAREER OPPORTUNITIES

- > Project engineer in nuclear energy projects including design and conception of installations.
- > Project manager in dismantling and decommissioning.
- > Project or safety engineer in nuclear waste processing, conditioning, safe storage.
- > Research scientist and development engineer.
- > Operation and maintenance engineer in power plant and other industrial applications.

## ERASMUS MUNDUS SCHOLARSHIPS

**Students from Programme countries** (Member States of the European Union + Republic of North Macedonia, Iceland, Turkey, Norway, Serbia, Liechtenstein) :

up to 20.000 Euro/year

**Students from Partner countries**

(rest of the world) :

up to 25.000 Euro/year

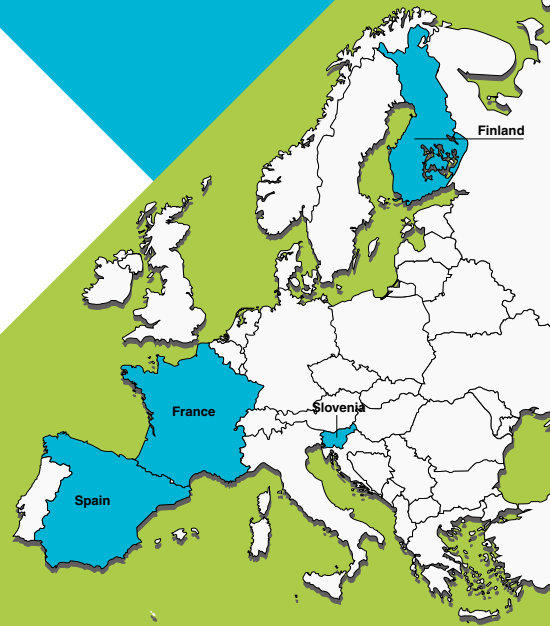
With the support of the Erasmus+ Programme of the European Union



## Abdesselam ABDELOUAS

Professor, coordinator of the programme

*"The training covers a wide range of nuclear applications, from the design and operation of nuclear power plants to the critical issue of radioactive waste management and decommissioning of nuclear power plants installations. The Erasmus Mundus Joint Master Degrees responds to the needs expressed by the actors in this sector and as such benefits from a broad support from industrialists (EDF, Orano, ASSYSTEM, GEN Enerjia) and public bodies in monitoring and research & development (Andra and CEA, particularly for France)."*



### Participating universities:

IMT Atlantique, France  
Universidad Politécnica de Madrid, Spain  
Lappeenranta University of Technology, Finland  
Univerza v Ljubljani, Slovenia

## IMT ATLANTIQUE

IMT Atlantique, coordinator of the programme is a "Grande Ecole" ranked among the best French Graduate Engineering Schools, and recognized internationally as a leading Technological University (Shanghai, QS and THE rankings). It is a member of IMT, the largest group of public Engineering and Management Graduate Schools in France.

### Find out more:

<http://www.imt-atlantique.fr/sarena/>

### Contact us:

[sarena@imt-atlantique.fr](mailto:sarena@imt-atlantique.fr)

### Apply:

<https://sarena.imt-atlantique.fr/>