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Joint AAPM/SEFM/AMPR Educational Workshop

"Education of Radiotherapy Physicists"

Challenges of Medical Physics Education in Spanish Universities

Facundo Ballester, PhD

University of Valencia, Spain

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Disclosure

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- Elekta
- Bebig
- Spanish government

Learning objectives

- Present the Bologna declaration and the Tunning project of the University studies in the EU
- Identify the weaknesses of the Spanish university studies structure
- New (desired) requirements to access Spanish residency programs in Medical Physcis

Contents

- European Higher Education Area (EHEA)
- The Bologna process
- Tuning project
- University studies in Spain
- Spain – EU studies matching/fitting
- Conclusions

The Bologna Declaration (1999)

- The BD is a pledge by 29 countries to reform the structures of their higher education systems in a convergent way
- It aims creating convergence, **not** uniformize higher education
- Action programme:
  - Creation of the European Higher Education Area (EHEA)
  - Common framewok based on the ECTS system
  - Undergraduate and postgraduate studies in all countries
  - Elimination of obstacles for free mobility

European Higher Education Area

EHEA:

- The Sorbonne declaration 1998 (France, Germany, Italy and UK) on harmonization of the architecture of the European higher education system
- The Bologna Declaration 1999 (29 countries)
- Follow-up
  - Prague 2001
  - Berlin 2003
  - Bergen 2005
  - Budapest-Vienna 2010

45 countries

The EHEA


Countries participating in the Bologna Process
Iceland
Sweden
Finland
Norway
Denmark
Ireland
UK
Estonia
Latvia
Lithuania
Russia
Kazakhstan
Neths.
Bel.
Lux.
Germany
Poland
Belarus
France
Czech Rep.
Portugal
Switz.
Liech.
Slovakia
Austria
Ukraine
Andorra
Italy
Hungary
Moldova
Spain
Slov.
Croatia
Romania
Monaco
San Marino
Bos. & Herz.
Serbia
Bologna
Holy See
Mont.
Kos.
Bulgaria
Albania
Mace.
Georgia
Armenia
Azerbaijan
Azer.
Greece
Turkey
Malta
N. Cyprus
Cyprus
0
500 mi
0
500 km
Bologna Process Membership Since 1999
From 1999
From 2001
From 2003
From 2005
From May 2007
From 2010
Still Eligible
© Kris Olds & Susan Robertson

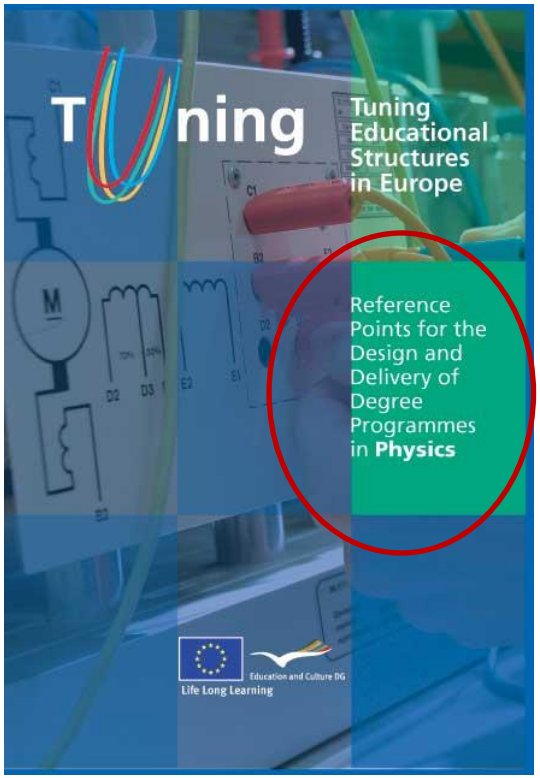
Tuning Educational Structures in Europe

Tuning
Educational Structures in Europe

- Started in 2000
- Process to re-design, develop , implement and enhance quality of 1st, 2nd and 3th cycle degrees programmes
- Developed by and is meant for high education institutions
- To establish points of reference, convergence and common uderstanding

Tuning Educational Structures in Europe

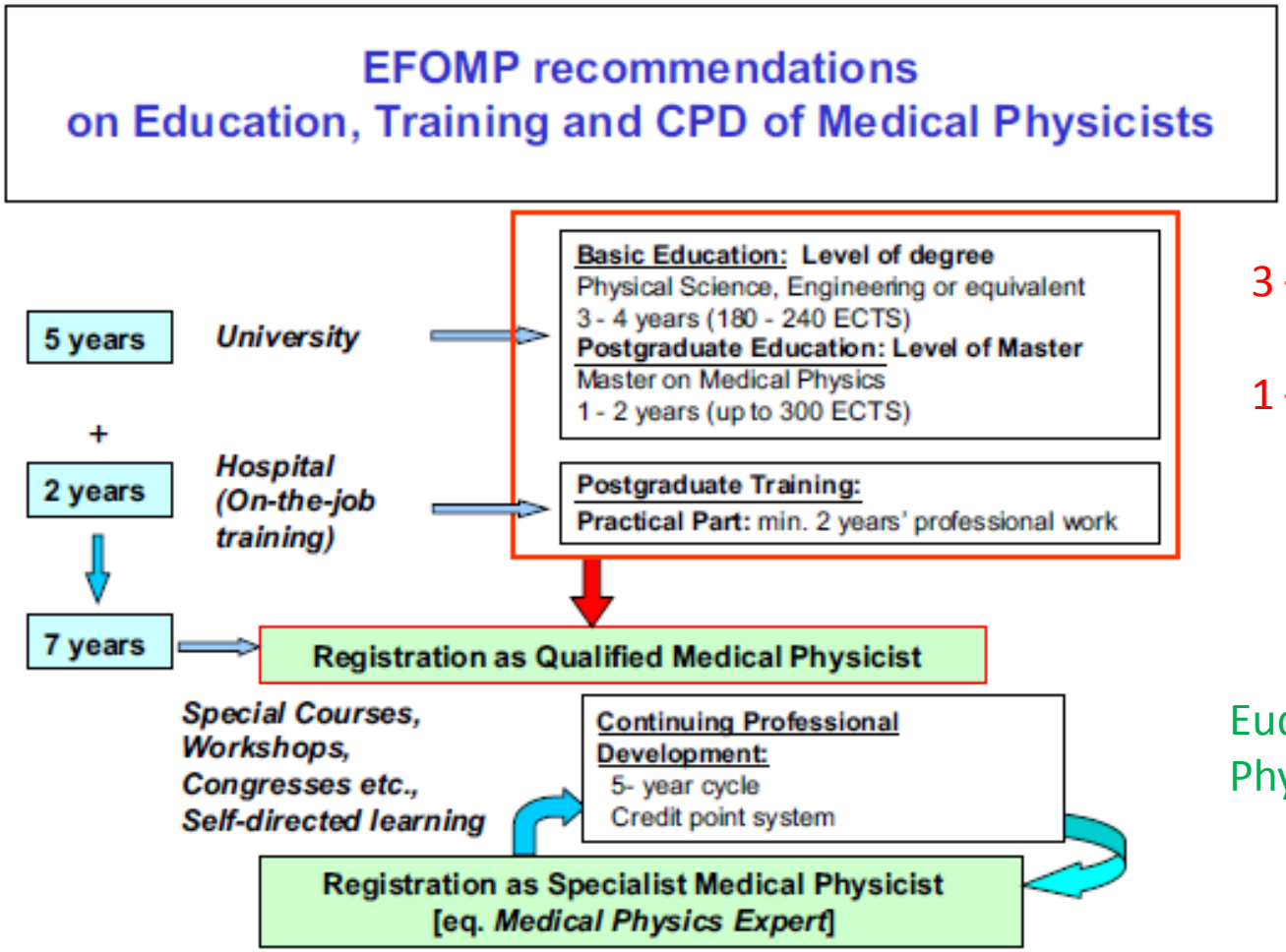
Physics



2nd cycle

Sub discipline / Field of specialization	Category / Group of professions	List of professions related to specialization / category
MEDICAL PHYSICS	• Medical Physicist	• Researcher and research assistant in universities, institutes, industry • Positions in Medical physics: hospitals, governmental institutions for medical care and health security • Positions in insurance companies, self-employed businesses • Technical consultancy

Duration of University studies in Medical Physics



3 – 4 years

1 – 2 years

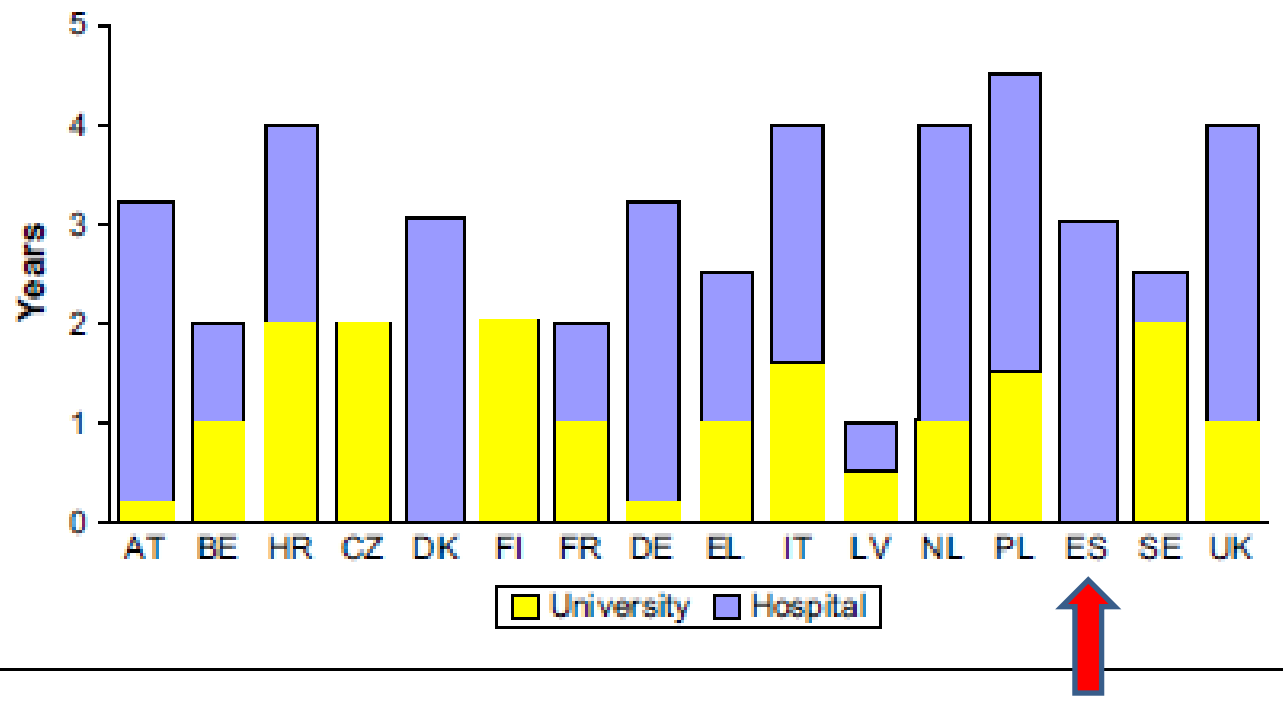
?

Eudaldo & Olsen
Physica Medica 2010

Duration of Post-graduate training in Medical Physics

(R&O, Eudaldo 2008)

Austria	AT
Belgium	BE
Croatia	HR
Czech Republic	CZ
Denmark	DK
Finland	FI
France	FR
Germany	DE
Greece	EL
Italy	IT
Latvia	LV
The Netherlands	NL
Poland	PL
Spain	ES
Sweden	SE
United Kingdom	UK

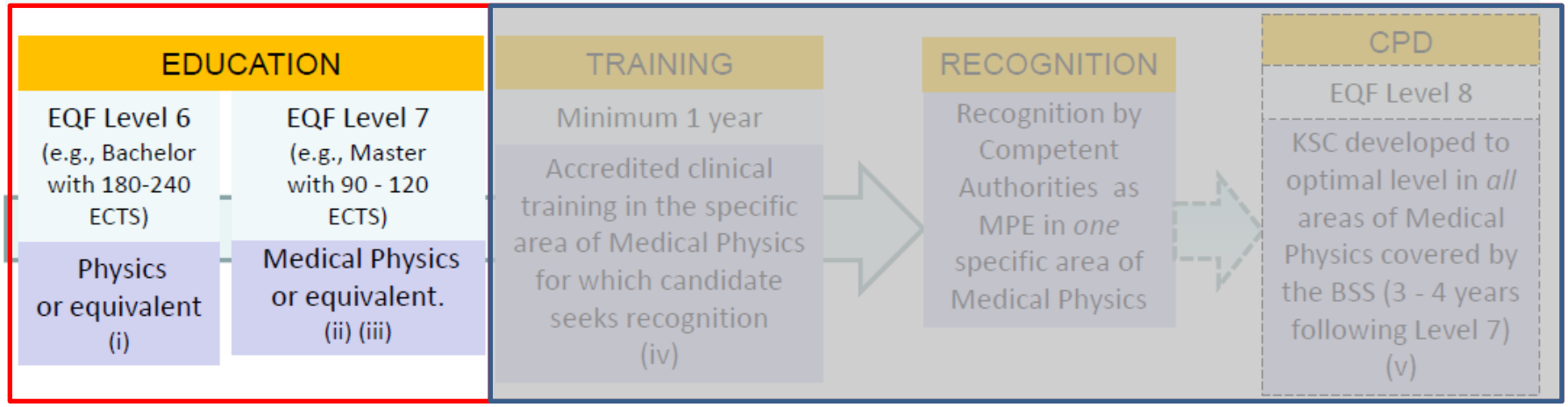


European Guidelines on Medical Physics Education. Radiation protection nº 174. EC 2014

Qualification Framework for the MPE in Europe

Medical Physics Expert: "An individual having the knowledge, training and experience to act or give advice on matters relating to radiation physics applied to medical exposure, whose competence to act is recognized by the Competent Authorities" (Recast BSS)

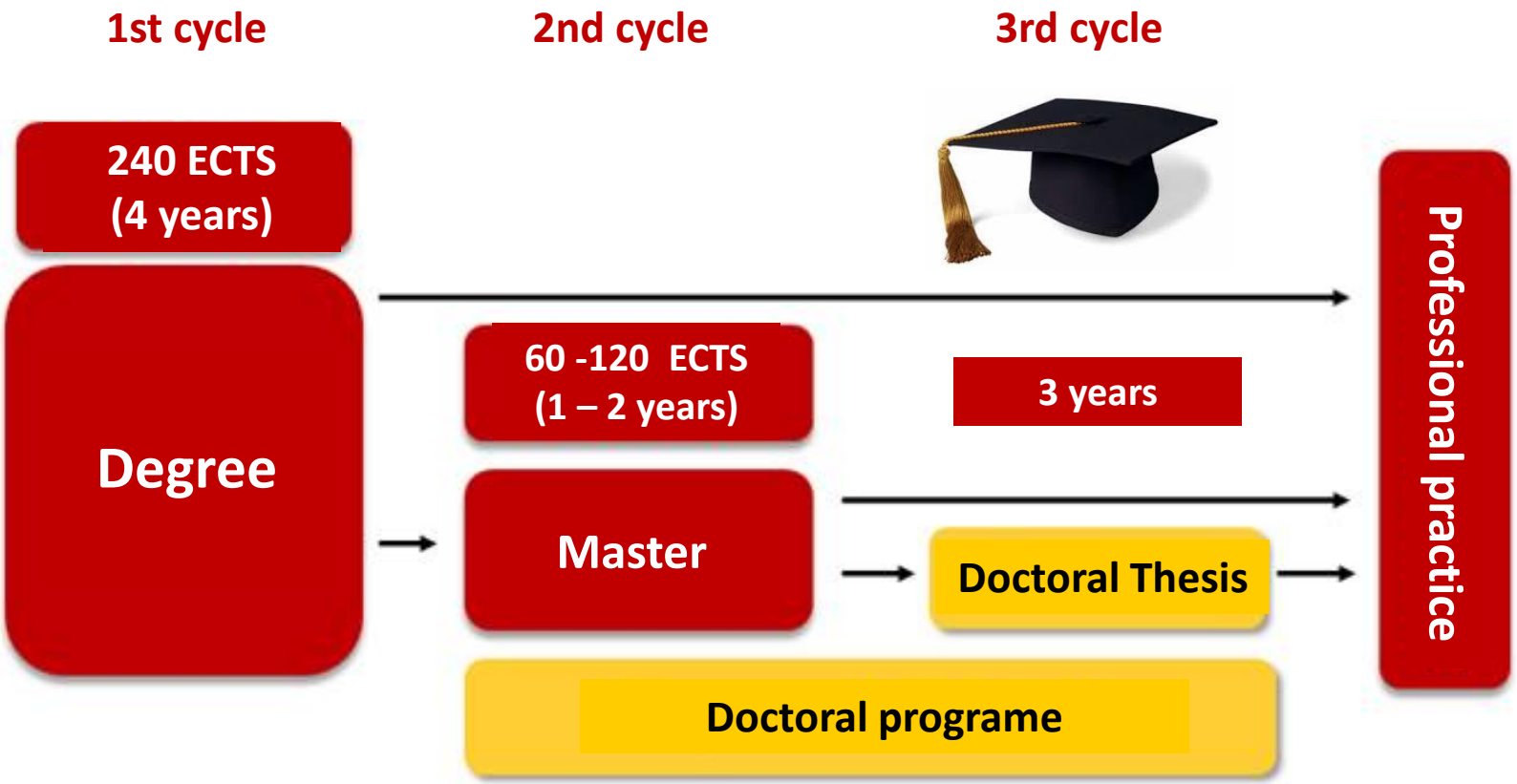
EQF = European Qualifications Framework KSC = Knowledge, Skills, Competences (EP&C, 2008/C 111/01)



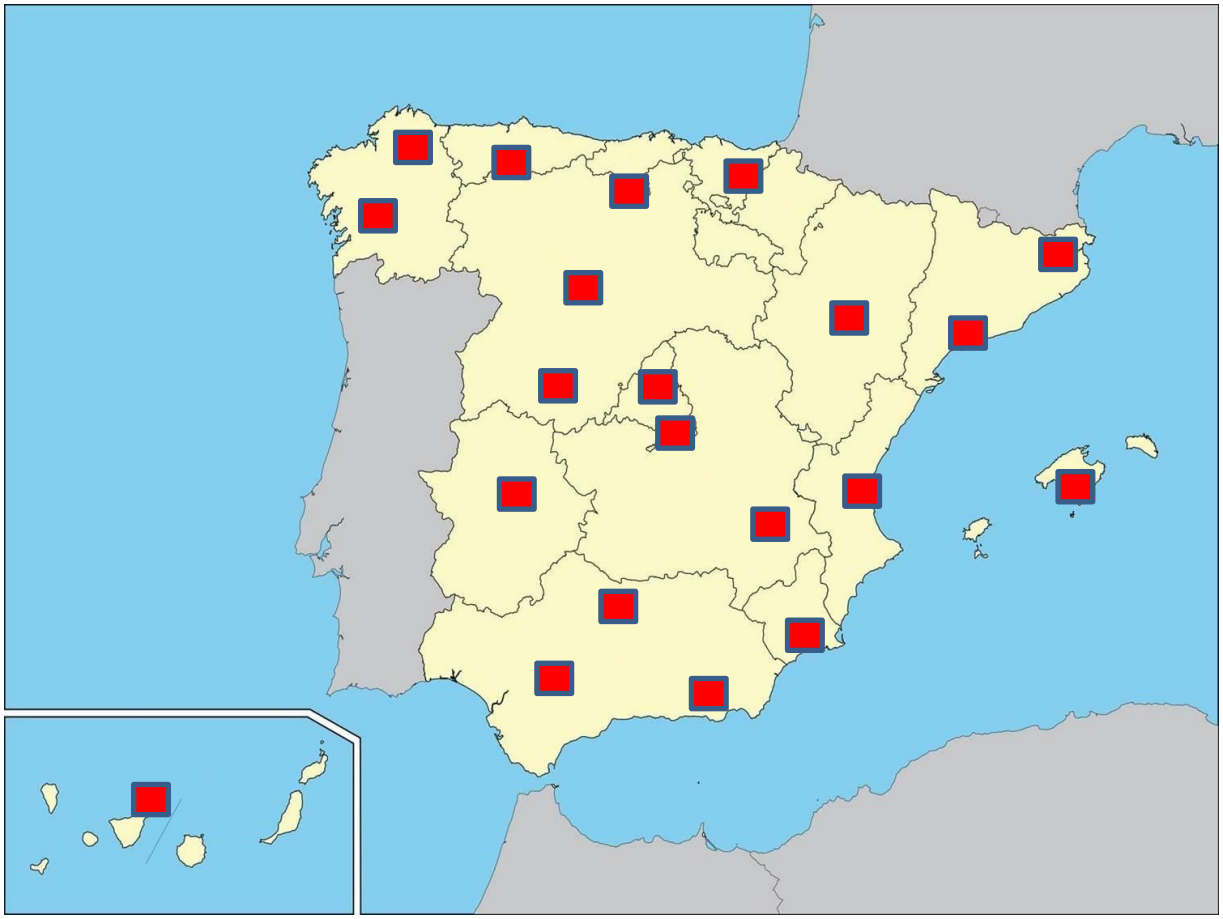
The Spanish university studies structure

European Credit Transfer and Accumulation System → ECTS

1 ECTS ≡ 25 h of student work

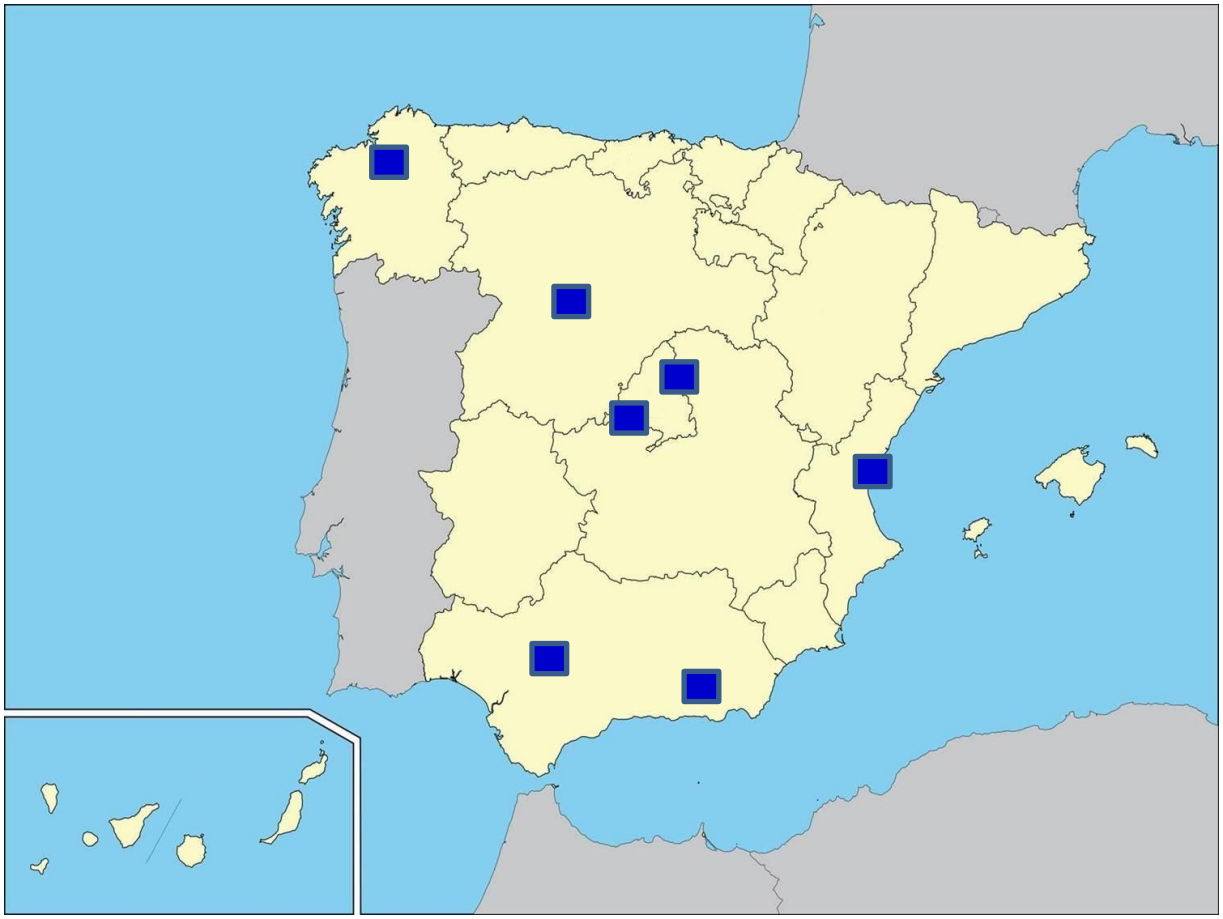


Faculty of Physics in Spain



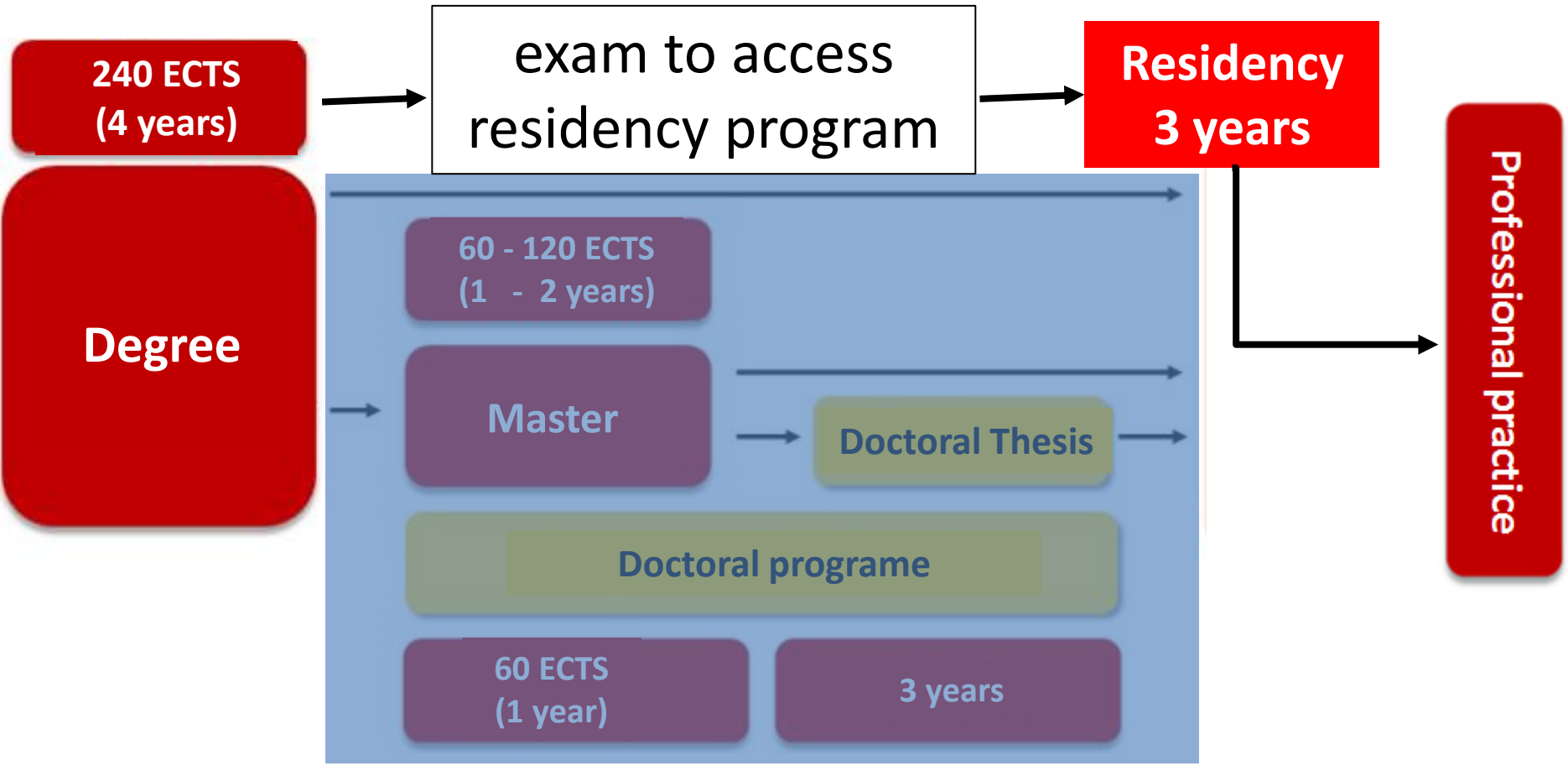
- 21 (public universities)
- 200 graduates / year
- Medical Physics oriented degrees: none
  - Only 1-2 optional courses on Radiation Physics or Biophysics per degree

Masters and Doctorates in Medical Physics



- 7 Masters (public universities)
- 20 MSc/ year
- Doctorate programe in Medical Physics:
  - Only 1 programme at the UNED (online public university)

Education requirements to enter the Medical Physics education in Spain



Spain-EU matching/fitting

Practical problems for students mobility. An example

- Spanish student moves to a master in Med. Phys. In Germany
  - Spanish degree 240 ECTS – 4 years
- Master in Med. Phys. in Germany
  - Msc 120 ECTS – 2 years
- Total 360 ECTS – 6 years

Spain-EU matching/fitting

Practical problems for students mobility. An example

- German student moves to a master in Med. Phys. In Spain
  - German degree 180 ECTS – 3 years
- Master in Med. Phys. in Spain
  - Msc 60 ECTS – 1 years
- Total 240 ECTS – 4 years

Conclusions

- Spain studies structure should be adapted to the scheme
  - 3 years bachelor
  - 2 years MSc
  - 4 years residency
- A MSc degree requirement to access residency program in Medical Physics

Thanks!