Medical Physics Certification in Europe

Cari Borrás, D.Sc., FAAPM, FACR, FIOMP

Chair, AAPM International Educational Activities Committee

Adjunct Assistant Professor (Radiology)
The George Washington University
School of Medicine and Health Sciences

Washington DC, USA
## EUROPEAN COUNTRIES

<table>
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<tr>
<th>MEMBERS (EU)</th>
<th>IOMP</th>
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Bologna Declaration: 1999
(> 46 countries)

1. Adoption of a system of easily readable and comparable degrees (implementation of the Diploma Supplement)
2. Adoption of a system essentially based on two main cycles, undergraduate and graduate
3. Establishment of a system of credits, such as in the ECTS system.
4. Promotion of mobility
5. Promotion of European co-operation in quality assurance
6. Promotion of the necessary European dimensions in higher education
Unfortunately, Medical Physics is not yet regulated in some European countries.

Education and Training of Medical Physics in Europe is not harmonized.

The total length (basic university + post-graduate training) ranges from 2½ years to 9 years.

EFOMP (European Federation for Medical Physics) has been promoting recommendations to harmonize this education and training.
EFOMP policy statement

European Federation of Organisations for Medical Physics (EFOMP)

C.J. Caruana a, *, S. Christofides b, G.H. Hartmann c

a Medical Physics Department, Faculty of Health Sciences, University of Malta, Malta
b Medical Physics Department, Nicosia General Hospital, Cyprus
c Department of Medical Physics and Radiation Therapy, German Cancer Research Centre in Heidelberg, Germany

2.1 Role of the MPE in the revised Basic Safety Standard (revised BSS)

Medical Physics Experts are defined and their roles are specified in the revised BSS. The more pertinent articles are:

Article 4: Definitions

(49) "medical physics expert" means an individual or, if provided for in national legislation, a group of individuals\(^3\), having the knowledge, training and experience to act or give advice on matters relating to radiation physics applied to medical exposure, whose competence in this respect is recognised by the competent authority;

Article 14: General responsibilities for the education, training and provision of information

2. Member States shall ensure that arrangements are made for the establishment of education, training and retraining to allow the recognition of radiation protection experts and medical physics experts ...
EUROPEAN COMMISSION

RADIATION PROTECTION

No. 174

EUROPEAN GUIDELINES ON MEDICAL PHYSICS EXPERT

ANNEX 1

Inventory of Learning Outcomes for the MPE in Europe

30 May 2012
Qualification Framework for the Medical Physicist and Medical Physics Expert in Europe

The Qualifications Framework is based on the European Qualifications Framework (EQF). In the EQF learning outcomes are defined in terms of Knowledge, Skills, Competences (KSC) (European Parliament and Council 2008/C 111/01).

<table>
<thead>
<tr>
<th>EDUCATION</th>
<th>CLINICAL TRAINING</th>
<th>ADVANCED EXPERIENCE and CPD</th>
<th>RECOGNITION</th>
</tr>
</thead>
<tbody>
<tr>
<td>EQF Level 6 (e.g., Bachelor with 180 - 240 ECTS) (i)</td>
<td>Certification as Medical Physicist in a given specialty (v)</td>
<td>EQF Level 8 in Medical Physics specialty (vii)</td>
<td>Certification as Medical Physics Expert in Medical Physics specialty (ix)</td>
</tr>
<tr>
<td>Physics or equivalent (ii)</td>
<td>Structured accredited clinical training residency in the specialty of Medical Physics for which the candidate seeks clinical certification. The duration should be typically two full-time year equivalents** (vi)</td>
<td>Structured advanced experience and CPD in the specialty of Medical Physics for which the candidate seeks certification as MPE. The duration would be a further minimum additional two full-time year equivalents*** (viii)</td>
<td></td>
</tr>
<tr>
<td>EQF Level 7 (e.g., Master with 90 - 120 ECTS) (iii)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Medical Physics* or equivalent (iv)</td>
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</tbody>
</table>

* Should include as a minimum the educational components of the Core KSC of Medical Physics and the educational components of the KSC of the Specialty of Medical Physics (e.g., Diagnostic & Interventional Radiology, Nuclear Medicine, Radiation Oncology, Physiological Measurement) for which the candidate seeks clinical certification. When this element of specialization is not included it must be included in the residency.

** The EQF level of the residency is intermediate between EQF levels 7 and 8. The training can follow or be concurrent with the Masters.

*** In countries where the MPE is required to be certified in further specialties of Medical Physics the number of years would need to be extended such that the MPE will achieve EQF level 8 in each specialty.

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EFOMP Policy Statement 12.1
EFOMP Policy Statement

The European Federation of Organisations for Medical Physics Policy Statement No. 10.1: Recommended Guidelines on National Schemes for Continuing Professional Development of Medical Physicists

Stelios Christofides a,*, Jorge Isidoro b, Csilla Pesznyak c, Florian Cremers d, Rita Figueira e, Christiaan van Swol f, Stephen Evans g, Alberto Torressin h

a Biomedical Research Foundation, P.O. Box 24039, 1700 Nicosia, Cyprus
b Coimbra Hospital and University Centre, 3000-075 Coimbra, Portugal
c Department of Technology and Economics, Budapest University, Muegyetem rkp. 3, 1111 Budapest, Hungary
d UKSH Lübeck, Ranzburger Allee 160, 23538 Lübeck, Germany
e Centro Hospitalar de São João, Alameda Prof. Hernani Monteiro, 4200-319 Porto, Portugal
f St. Antonius Hospital, PO Box 2500, NL-3430 EM Nieuwegein, Netherlands
g EFOMP, Fairmount House, 230 Tadcaster Road, York YO24 1ES, UK
h Medical Physics Dep., Niguarda Ca' Granda Hospital, Milano, Italy

ARTICLE INFO

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ABSTRACT

Continuing Professional Development (CPD) is vital to the medical physics profession if it is to embrace the pace of change occurring in medical practice. As CPD is the planned acquisition of knowledge, experience and skills required for professional practice throughout one's working life it promotes excellence and protects the profession and public against incompetence. Furthermore, CPD is a recommended prerequisite of registration schemes (Caruana et al. 2014 [1]; [2]) and is implied in the Council Directive 2013/59/EURATOM (EU BSS) [3] and the International Basic Safety Standards (BSS) [4]. It is to be noted that currently not all national registration schemes require CPD to maintain the registration status necessary to practise medical physics. Such schemes should consider adopting CPD as a prerequisite for renewing registration after a set period of time.

This EFOMP Policy Statement, which is an amalgamation and an update of the EFOMP Policy Statements No. 8 and No. 10, presents guidelines for the establishment of national schemes for CPD and activities that should be considered for CPD.
Professional status of Medical Physicists

Certification - Does the qualification framework lead to certification?

No: 11 countries
32%

Yes: 23 countries
68%

2015 IAEA Questionnaire on Medical Physics Status in Europe
Professional status of Medical Physicists

Certification - If yes, is there a recertification system in place?

Yes  12 countries:  39%
No:  19 countries  61%

2015 IAEA Questionnaire on Medical Physics Status in Europe
Poland

▲ Medical physics profession recognized in 2002
▲ The Ministry of Health introduced a specialization in medical physics (with same rules as physicians’)
▲ First cycle started in 2007
  • Training ended in 2008
  • Official State Exams were held in 2009
▲ As of 2016:
  • 196 specialized medical physicists
  • 120 undergoing specialization
▲ Program was revised in 2011 to meet EC and EFOMP recommendations

THE EDUCATION AND TRAINING SCHEME FOR SPECIALISTS IN MEDICAL PHYSICS IN SPAIN
Bologna process, from 2011

University (4 y. new degree) and (5 y. old degree “licenciatura”)

Followed by

Physics degree
Other scientific and/or technological degrees with a high physics and mathematics content

National exam
Limited places (about 30 per year)

Followed by

Only candidates with the highest marks enter the special training as a Medical Physics Specialist in the medical physics departments of accredited teaching hospitals, called “Unidades Docentes”.

Followed by

Theoretical and practical training in Medical Physics departments of accredited teaching hospitals (Unidades Docentes) (3 years)
Italy

“Specializzazione in Fisica Medica”

▲ 3 year program: University Faculty of Medicine
  • Academic courses
  • Exams
  • Supervised clinical training in DX, NM and RT
  • Defense of a research project

▲ The Degree represents
  • “Certification” as a clinical medical physicist
  • “Registration” in the University directory

▲ 150 CPD credits to be acquired every 3 years
  • To maintain competences & employment

R. Padovani, 2019
Greece

▲ BSc in Physics
▲ MSc in Medical Physics or equivalent
▲ 1 year clinical training
▲ Certification exams at the Ministry of Health
  a) Ionizing radiation
  b) Non ionizing radiation (MRI, antennas, laser…)
▲ If passing → License to work
  a) in Medical Radiation Physics
  b) ONLY in non ionizing radiation

This scheme will change as medical physics has now become a medical specialty

V. Tsapaki, 2019
Russian Federation

▲ MS in Medical Physics or MS in Nuclear Physics with additional courses in Medical Physics

▲ A new Professional Standard which will require a verification process by the Ministry of Health is being developed

Yuri Kurpichev, 2019
EFOMP Policy Statement

EFOMP policy statement 16: The role and competences of medical physicists and medical physics experts under 2013/59/EURATOM

Carmel J. Caruana¹, Virginia Tsapaki, John Damilakis, Marco Brambilla, Guadalupe Martín Martín, Asen Dimov, Hilde Bosmans, Gillian Egan, Klaus Bacher, Brendan McClean

EFOMP, United Kingdom

ABSTRACT

On 5 December 2013 the European Council promulgated Directive 2013/59/EURATOM. This Directive is important for Medical Physicists and Medical Physics Experts as it puts the profession on solid foundations and describes it more comprehensively. Much commentary regarding the role and competences has been developed in the context of the European Commission project “European Guidelines on the Medical Physics Expert” published as Radiation Protection Report RP174. The guidelines elaborate on the role and responsibilities under 2013/59/EURATOM in terms of a mission statement and competence profile in the specialty areas of Medical Physics relating to medical radiological services, namely Diagnostic and Interventional Radiology, Radiation Oncology and Nuclear Medicine. The present policy statement summarises the provisions of Directive 2013/59/EURATOM regarding the role and competences, reiterates the results of the European Guidelines on the Medical Physics Expert document relating to role and competences of the profession and provides additional commentary regarding further issues arising following the publication of the RP174 guidelines.
Curriculum Framework for Medical Physics in Europe
Registration - Is there a national registry for medical physicist?

- No: 12 countries (34%)
- Yes: 23 countries (66%)

2015 IAEA Questionnaire on Medical Physics Status in Europe
Professional status of Medical Physicists

Registration - Who runs it?

- Governmental Office: 12 countries (52%)
- Professional Body: 10 countries (43.5%)
- Governmental Office & Professional Body: 1 country (4.5%)

2015 IAEA Questionnaire on Medical Physics Status in Europe
Professional status of Medical Physicists

Recognition - Is there a designated competent authority for MP recognition?

No: 13 countries
41%

Yes: 19 countries
59%

2015 IAEA Questionnaire on Medical Physics Status in Europe
EFOMP Policy Statement

The European Federation of Organisations for Medical Physics Policy Statement No. 6.1: Recommended Guidelines on National Registration Schemes for Medical Physicists ★

Stelios Christofides a,*, Jorge Isidoro b, Csilla Pesznyak c, Lada Bumbure d, Florian Cremers e, Werner F.O. Schmidt f

a Biomedical Research Foundation, P.O. Box 24039, Nicosia 1700, Cyprus
b Coimbra Hospital and University Centre, Praceta Prof Mota Pinto, Coimbra 3000-075, Portugal
c Budapest University of Technology and Economics, Muegyetem rkp., Budapest 1111, Hungary
d Riga Technical University, Kalku street 1, Riga LV-1658, Latvia
e Department of Radiotherapy, UKSH Lübeck, Ratzeburger Allee 160, Lübeck 23538, Germany
f Institute for Radio-Oncology, Donaupolis Vienna, Langobardenstrasse 122, Vienna A-1220, Austria

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Keywords:
Medical physics
Medical physicist
Policy statement
National registration scheme

ABSTRACT

# NATIONAL REGISTRATION SCHEME EVALUATION FORM

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<thead>
<tr>
<th>Country</th>
<th>NMO</th>
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</thead>
<tbody>
<tr>
<td>Contact person</td>
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<td>E-mail address</td>
<td>E-mail address</td>
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<tr>
<td>Date</td>
<td>Date</td>
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**Medical Physics subspecialties for which the registration applies**

<table>
<thead>
<tr>
<th>1</th>
<th>A clear statement of the aims of the scheme including the levels of recognition is available.</th>
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<tbody>
<tr>
<td>2</td>
<td>A properly constituted Registration Council is installed and functioning.</td>
</tr>
<tr>
<td>3</td>
<td>A complete set of criteria concerning scientific knowledge and practical competencies is defined and used for registration.</td>
</tr>
<tr>
<td>4</td>
<td>An education &amp; training programme can be provided that is consistent with the EFOMP policy statement on education and training (EFOMP PS 6.1) and the EU guideline (RP 174).</td>
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<table>
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<tr>
<th>Criterion</th>
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<th>Remarks by the NMO</th>
<th>Note by PMC member</th>
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<td>5.</td>
<td>The Registration Council maintains a list of registered MPE's.</td>
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<td>6.</td>
<td>Registration is renewed at least every five years based on evidence of continuing activity in relevant areas (EFOMP PS 10.1).</td>
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<td>7.</td>
<td>Rules of Professional Conduct are devised and enforced by the NMO (EFOMP PS 11).</td>
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<td>8.</td>
<td>The NMO has drafted regulations for Professional Misconduct, which includes a procedure for notification and disciplinary action.</td>
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1) Examples of expert areas are radiotherapy, diagnostic and Interventional radiology, nuclear medicine, hospital physics etc.).

2) It is recommended that these are in line with the learning outcomes prescribed in RP174 at the appropriate level in order to meet the requirements of paragraph 2 of article 49a of Directive 2013/55/EU)

<table>
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<th>Member of Professional Matters Committee</th>
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<td>Recommendation</td>
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Countries with MPE Registration requesting approval from EFOMP about their National Registration Scheme

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<td>Sweden</td>
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To harmonize Medical Physics education & training standards, thus facilitating the mobility of medical physicists in Europe.

About EFOMP’s Examination Board

Dear colleagues,

EFOMP’s Examination Board (EEB) has been established to facilitate the harmonization of Medical Physics education and training standards throughout Europe. EEB introduces the European Diploma of Medical Physics (EDMP) and the European Attestation Certificate to those Medical Physicists that have reached the Medical Physics Expert level (EACMPE). EEB examinations are tests of excellence in Medical Physics. They are designed to assess the knowledge, skills and competences requisite for the delivery of high standard Medical Physics services.

Currently medical physicists in European countries face difficulties in providing the necessary qualification evidence when they seek employment in other EU Member States or other countries. The EDMP will facilitate mobility of medical physicists in Europe and beyond. Furthermore, EEB provides an attestation certificate to those medical physicists that have reached the Medical Physics Expert level to be recognized by the relevant competent authorities of the EU according to the EU Directive 2013/59/EURATOM laying down the basic safety standards for protection against the dangers arising from exposure to ionising radiation (EU BSS). Information about EDMP and EACMPE, examination dates, venue, application forms and other documents can be found in this webpage.

The EEB examinations are voluntary. EEB diplomas will not replace any national certificates. However, they will be a common European qualification for medical physicists and will help to standardise training and expertise in Medical Physics across Europe.

Professor John Damilakis
EEB Chair
EFOMP’s Examination Board
Statistics
(The EEB was established in 2016)

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<th>Date</th>
<th>Location</th>
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<td>12</td>
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<tr>
<td>21 &amp; 22 August 2018</td>
<td>Copenhagen, Denmark</td>
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<td>9</td>
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<td>8 &amp; 9 October 2019</td>
<td>Warsaw, Poland</td>
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Data provided by John Damilakis, 2019