



**EUROPEAN FEDERATION OF ORGANISATIONS FOR
MEDICAL PHYSICS**

**EUROPEAN SCHOOL FOR THE MEDICAL
PHYSICS EXPERT - ESMPE**

Quality Manual

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1. Introduction

There is a strong demand for new education and training courses in medical physics following the publication of the European Commission (EC) Guidelines on Medical Physics Expert (MPE) report No. 174 [1] and the European Union Basic Safety Standards Directive 2013/59/EURATOM (EU BSS) [2], as well as the rapid development of medical techniques based on ionising radiation, growth of hospitals and the continuous need to produce competent health professionals in medical physics. Additionally, external assessment of the quality of education or training provision is needed [3].

To satisfy this demand, the European Federation of Organisations for Medical Physics (EFOMP) has organized five successful courses over in three years attended by more than 200 people coming from all Europe under the title of the European School for the MPE. At its Marburg Council meeting held on the 11th of September 2015, EFOMP agreed to set up an organisation to facilitate further courses under the title of the EFOMP School for the Medical Physics Experts (ESMPE)

The terms of reference and other related procedures are presented in this document, the ESMPE Quality Manual.

2. Definitions and Requirements

Accreditation: is a process by which a recognised body assesses and recognises that the education and/or training provided by an institution meets acceptable levels of quality. Therefore there are two parties involved in this process: the institution that provides education and training and an external organisation which performs the external assessment and awards accreditation as a result of positive evaluation.

Recognition: is a process by which a national authority recognises the professional equivalence of foreign higher education diplomas or other evidence of formal qualification awarded upon the completion of a course at a higher education or training institution.

Certification: is a process that recognises an individual professional who has demonstrated special knowledge and expertise and has successfully completed the education or training provided by an accredited organisation.

Certified medical physicists bring important benefits to their patients and themselves. Because of their special education and training, certified medical physicists demonstrate knowledge and competence, enabling them to justify and optimise procedures and provide better patient care.

To make medical physics more understandable to decision makers and management of healthcare institutions and provide direction for role holders, a mission statement has been formulated based mainly on the relevant articles of the EU BSS [1]. The mission statement is the following:

“Medical Physicists (QMPs, CQMPs and MPEs¹) will contribute to maintaining and improving the quality, safety and cost-effectiveness of healthcare services through patient-oriented activities requiring expert action, involvement or advice. This activity includes the specification, selection, acceptance testing, commissioning, quality assurance/control and optimised clinical use of medical devices (e.g., radiological devices, physiological measurement devices) and assessing and managing patient risks from associated physical agents (e.g., ionising radiation, strong electromagnetic static and RF fields, ultrasound, optical radiation, vibration). The work will include protection from such agents, installation design and surveillance, and the prevention of unintended or accidental exposures to such physical agents. All activities will be based on current best evidence or own scientific research when the available evidence is not sufficient. The scope includes risks to volunteers in biomedical research and carers and comforters”.

Accreditation of the events organized by ESMPE should be based upon established standards and guidelines [3] and performed by an independent organization. The minimum requirements for accreditation of a training programme should take into account aspects related to admission policy, facilities, staff, certification programmes, educational material, teaching methods, administration and archives, course updates and course evaluation. It is noted here that accreditation is outside the scope of the ESMPE.

Education providers should have the knowledge and skills in the procedures carried out by the healthcare professionals involved in the training activity in order to plan and provide effective education and training [4].

¹ QMP stands for Qualified Medical Physicist, CQMP stands for Clinically Qualified Medical Physicist and MPE stands for Medical Physics Expert.

Scientific programme content and educational material should be reviewed periodically to ensure that they remain up-to-date. Course evaluation is usually performed at the end of a course using a questionnaire. Course participants answer questions related to several aspects of the educational process such as educational material, course duration and teaching effectiveness.

Certification is usually based on examinations. Several evaluation methods can be considered to examine knowledge in medical physics including written examinations, oral examinations and research projects. Recertification programmes ensure that certified professionals maintain, develop or improve their Knowledge, Skills and Competence (KSC) in the area of medical physics that they are certified. It is noted here that certification is inside the scope of the ESMPE.

There are several initiatives and tools developed by the EC to facilitate the accreditation, certification, validation and recognition of knowledge as well as to promote the mobility of students, educators and researchers. The European Qualifications Framework (EQF) for Lifelong Learning (LLL) [5] is a tool based on Learning Outcomes (LOs) and aims to relate national qualifications frameworks to a common European reference framework [6]. The European Credit Transfer and accumulation System (ECTS) is a grading system developed to facilitate the transfer of students [7]. One year of a study programme is equivalent to 60 credits [8]. ECTS is compatible with the EQF and can help medical physics Schools to implement Quality Assurance procedures.

Accreditation of events organized by ESMPE will be required in terms of CPD points.

Medical physics education and training events must be accredited by an external, independent accreditation body. In accordance with the EQF, the guidelines presented in the EC guidelines on the MPE [1] list the required LOs in terms of KSCs and should be utilised for ionising radiation related education and training events. Information is provided separately for each medical physics specialty involving ionising radiation. This information can be used by accreditation bodies to evaluate the content of education and training programmes in medical physics offered by organisations such as professional and scientific societies, etc.

Other relevant definitions are given in Appendix A.

3. Quality Management System

The operation of the ESMPE will be in accordance to its quality management system as described in this document, its Quality Manual.

3.1 Scope

The ESMPE will organise medical physics education and training events specifically targeted towards Medical Physicists who are already MPEs or would like to achieve MPE status.

These events are open to all European Medical Physicists and will be accredited by an independent body to ensure that they are at the required educational level, i.e., Level 8 of the European Qualifications Framework. This level is described as: "knowledge at the most advanced frontier of a field of work and at the interface between fields, the most advanced and specialised skills and techniques, including synthesis and evaluation, required to solve critical problems in research / innovation and to extend / redefine existing professional practice, demonstrate substantial authority, innovation, autonomy, professional integrity and sustained commitment to the development of new ideas or processes at the forefront of work contexts including research".

Particular attention will be given by ESMPE in promoting the attendance at the School by students coming from European low income countries

3.2 Quality Policy

The ESMPE is committed to document, implement and maintain a quality management system and continually improve its effectiveness in order to assure a quality service to individuals attending the School.

3.3 Organisational Structure

The work of ESMPE will be carried out by its Board. The composition, qualifications and ethical conduct of the Board of the ESMPE are described below.

3.3.1 Board Composition

The ESMPE Board will consist of prominent Medical Physicists with expertise in the education and training of medical physicists.

The Board will consist of the Chair of the School, the Vice Chair /Past Chair, the Chair and the Vice Chair/Past Chair of the Education and Training Committee of the EFOMP, the Chair and the Vice Chair/Past Chair of the Scientific Committee of the EFOMP and the Chairs of the Local Organizing Committee. The post of Past Chair will normally be filled by the Immediate Past Chair for the two years following the end of the Chair's term of office.

The term of office of the members of the Board are:

Board members	Normal term of Office, years	First term of Office, years
Chair	3	3
Vice-Chair/Past Chair	1 and 2 respectively	2 (there will be no Past Chair)
Chair of the EFOMP E&T Committee	2	As in the EFOMP
Vice- Chair/Past Chair of the EFOMP E&T Committee	1	As in the EFOMP
Chair of the EFOMP Scientific Committee	2	As in the EFOMP
Vice- Chair/Past Chair of the EFOMP Scientific Committee	1	As in the EFOMP
Chair of the Local Organizing Committee	According to NMO rules	According to NMO rules
Members of the Scientific Committee	4	4 (three for 3 years)

The Chair and the Vice Chair of the ESMPE will be nominated by the EFOMP Board.

3.3.2 Board Role

The role of the Board is to act as the highest level decision-making body of the ESMPE. The Board decisions are made by a simple majority of votes. Each member of the Board has 1 vote.

The **responsibilities** of the Board are to:

- a) meet at least once a year (also using teleconferences) to review the results of the ESMPE and, in particular, in terms of its Schools' achievements, challenges and to address any problems
- b) take decisions regarding changes to the content of the work, educational aspects, finances, legal issues and intellectual property rights
- c) submit an annual report to the EFOMP Board accounting for its activity over the past year.

3.3.3 Board Member Qualifications

Persons being considered for appointment as Board members of the ESMPE are required to submit a CV to the EFOMP Board to demonstrate that they meet the following criteria:

- a minimum of 10 years' experience in a senior position in medical physics, normally as an MPE;
- a position which entails (or has in the past entailed) appraisal and management of the performance of individuals engaged in medical physics;
- experience of teaching in medical physics at postgraduate level (EQF level 8);

- academic qualifications and experience in medical physics equivalent to EQF level 8;
- membership of a European NMO of EFOMP.

3.3.4 Ethical conduct

Board members are expected to follow the Code of Conduct as set out in Annex 10 of the EFOMP Manual².

3.3.5 Election of ESMPE Board members

3.3.5.1 Notification

Five months prior to the end of a Board member's term of office the EFOMP Secretary-General will inform the NMOs of the necessity to hold elections and request nominations for the posts that will become vacant.

Nominations should be submitted to the Secretary General within two months from the call for nominations and should consist of:

- a formal letter of nomination including the name and affiliation of the nominee, from the President of the EFOMP NMO of which the nominee is a member.
- a letter from the candidate accepting his/her nomination
- a statement (up to 500 words) by the nominee in relation to the post for which he/she is nominated demonstrating a knowledge and interest in the field and highlighting any other experience which makes them suitable for the post
- a short CV limited to 3 pages A4. The CV should cover the nominee's qualifications as specified in section 3.3.3.

3.3.5.2 Scrutiny of the submitted nominations

The Secretary-General will scrutinise the nominations to ensure that the supporting paperwork is in order and that those nominated are willing and eligible to stand.

3.3.5.3 Appointment of Tellers

The Board will appoint two tellers to receive and count the votes.

3.3.5.4 Issue and Return of Voting Papers

The Secretary-General will issue a ballot paper to each NMO at least two months prior to the completion of the Board member's term of office, together with information about each candidate. The voting paper will list all the candidates standing for each post.

Voting papers will normally be issued and returned to the tellers by email. Voting papers must be returned to the two tellers no later than by a date specified by the Secretary-General which must be at least 14 days after issue of the voting papers.

² <http://www.efomp.org/index.php/manual>

3.3.5.5 Recording and Counting Votes

Voters should record on the voting paper their order of preference (or ranking 1, 2, 3 etc.) for each candidate for a particular post. A majority of votes (more than 50% of valid votes) is required to be cast for a particular candidate for that candidate to be declared the winner. Voters are only required to declare their first preference for their vote to be valid - declaration of second and subsequent preferences is optional.

1. First Round. The first preference votes are counted and if one candidate receives a majority of first preference votes then he or she is declared the winner.
2. Second Round. If no candidate is identified as the winner in the first round then the candidate with the least number of first preference votes is eliminated and the second preference votes of that candidate are distributed between the remaining candidates adding to their first preference votes. If one candidate now receives a majority of votes cast (first and second preferences) then he or she is declared the winner.
3. Third and Subsequent Rounds. If no candidate in the second round obtains a majority of the votes cast then the above procedure is repeated, with the candidate with least number of total (first and second preference) votes cast eliminated and their next preference votes distributed amongst the remaining candidates, and this procedure is repeated till one candidate receives an outright majority.

3.4 Operating Procedures

3.4.1 Event Organization Procedure

1. The type of events that ESMPE can organize are (but not exclusively):
 - a. Courses
 - b. Seminars
 - c. Workshops
2. For each event the Board will identify a Scientific Chair who will be responsible for the programme, for identifying lecturers, and for organizing the final examination.
3. The Organization is done in conjunction with an NMO who will be responsible for:
 - a. identifying the venue and taking care of the logistics of the event.
 - b. organizing lunches, coffee break, and social dinners
 - c. providing the accommodation for lecturers
 - d. creating a preliminary budget before the event and a definitive budget after the event
4. EFOMP and the NMOs organizing the event will be equally responsible for all financial aspects of the School. EFOMP and the NMO will benefit on a 50%-50% basis of any financial profit made from the School and will share, on an identical basis, the whole cost of any loss arising from the School.
5. Any other aspect related to the organizational aspects of the School will be regulated by a formal agreement between the ESMPE and the NMO.
6. Participants will be offered the possibility of undergoing assessment
 - a. Participants will receive the results of the assessment from the Chair of the School

within 1 month following delivery of the School

- b. All participants who were assessed will be awarded a mark whose corresponding classification is as follows: < 50% fail, 50 – 64% Pass, 65 – 79% Merit, 80-100% Distinction.
7. All participants will receive a certificate indicating the number of CPD points awarded for attending the School. For those undertaking the assessment the certificate will also include the results of the assessment as specified in point 6 above.

3.4.2 Lecturers

1. Normally lecturers should have been recognised as an MPE or be working at the level of an MPE in the particular specialty of Medical Physics or hold a PhD related to the School topic. This requirement may be waived only following a specific request by the Scientific Chair of the School and addressed to the Chair of the ESMPE Board.
2. Lecturers will receive reasonable expenses but will not otherwise normally be remunerated
3. Lecturers will be required to provide teaching material prior to the start of the School as requested by the Scientific Chair.
4. Lecturers will be expected to provide a short CV in the format required for the accreditation of the School.
5. Lecturers must provide an electronic copy of their lecture for the School records.

3.4.3 Event Internal Evaluation Procedure

1. The participants will be requested to make the following judgements, using the form agreed by the Board, about each event:
 - Are the learning outcomes clearly stated? Do they reflect the teaching that the student received?
 - Is the supporting material sufficient to support the learning outcomes?
 - Is the programme aimed at the EQF level 8?
 - Where the event is in the area of ionising radiation, do the learning outcomes reflect the relevant KSC's as set out in RP174 Annex I [1]?
 - Are the speakers at the event suitably qualified to deliver the programme?
 - Is the teaching methodology suitable?
 - Is the method for recording attendance robust?
 - Where an end-of-course assessment is planned; is it appropriate and at EQF level 8?
2. The forms will be collated by the Scientific Chair and a summary, together with the originals, sent to the Chair of the Board.
3. The Board may require further clarification from the Scientific Chair or it may order an external audit, see 3.4.4

3.4.4 Event External Evaluation Procedure

1. Prior to the start of the School the Scientific Chair will apply for external accreditation from

the European Board for the Accreditation of Medical Physics (EBAMP). EBAMP will acknowledge accreditation by the assigning of CPD points for the School.

2. Where, in the view of the ESMPE Board and the Scientific Chair, the internal evaluation procedure has identified issues of concern then it will identify external auditors to advise it on the necessary corrective actions.
3. The auditors will have experience of teaching at EQF level 8 and will not have professional connections with those who delivered the School. The auditors will have access to all relevant material connected with the School.
4. If wished the auditors may contact the students who had attended the School.
5. The auditors' report will be sent to the ESMPE Board who will copy it, together with a note of the Board's consequent actions, to the EFOMP Education and Training Committee.
6. The ESMPE board may, at any time, request that an external audit be performed on a School.

3.4.5 Complaint Handling Procedure

1. A participant on a School has the right to raise any issue concerning the way in which the School has been run or in which their performance has been assessed.
2. Any complaint must be made in writing (email is acceptable) to the Chair of the Board with a copy to the Scientific Chair. It should be made within one month of receiving the finish of the School. All complaints will be treated as matters of urgency.
3. Where the complaint cannot be resolved by the action of the Chair of the Board, he/she will, after consultation with the members of the Board, appoint an Appeals Panel consisting of an independent chairman and two Board members who have had no previous connection with the School. In the event of no Board members being available or competent to act then members will be provided by the chair of the Education and Training Committee.
4. The Panel will:
 - a. Consider the complaint from the appellant setting out the grounds for the complaint
 - b. Consider all available information
 - c. Call for such additional information as it might consider necessary
 - d. Produce a report with recommendations for the Board.
5. The Board, excluding those involved in the School and the complaints panel, will decide the outcome of the complaint and inform the complainant. The Board's decision is final.
6. The Chair of the Board will inform the complainant of the outcome of the complaint giving such reasons for the decision as the Board judge to be appropriate.

3.4.6 Document and Record Handling Procedure

The Board will maintain a database of all applications to include the following information:

- a) Title of the event
- b) Name and address telephone, and E-mail address of the applicants
- c) Number of CPD points awarded to the event
- d) Lectures provided in electronic format

4. Termination of ESMPE

EFOMP Council has the right to terminate the activities of ESMPE at any time for any justifiable reason.

References

- [1] European Commission Radiation Protection Report No. 174, "European Guidelines on Medical Physics Expert", Directorate-General for Energy, Directorate D – Nuclear Safety & Fuel Cycle, Unit D.3 – Radiation Protection, 2014, (last accessed on 20th of February 2015) http://ec.europa.eu/energy/sites/ener/files/documents/rp174_annex1.pdf
- [2] Council Directive 2013/59/EURATOM of 5 December 2013 laying down basic safety standards for protection against the dangers arising from exposure to ionising radiation, and repealing Directives 89/618/Euratom, 90/641/Euratom, 6/29/Euratom, 97/43/Euratom and 2003/122/Euratom, OJ L13, 17/01/2014, PP 1-73, (last accessed on 20th of November 2014) <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32013L0059&from=EN>
- [3] Accreditation and quality assurance in vocational education and training. Selected European approaches. European Centre for the development of vocational training, CEDEFOP, Luxembourg, 2009
- [4] ICRP, 2009. Education and Training in Radiological Protection for Diagnostic and Interventional Procedures. International Commission on Radiological Protection (ICRP) Publication 113, Ann ICRP (2009) 39(5).
- [5] EC, 2008. Explaining the European Qualification's Framework for Lifelong Learning. Office for the official publications of the European Union, Luxembourg, (last accessed on 24th of November 2014). https://ec.europa.eu/ploteus/sites/eac-eqf/files/brochexp_en.pdf
- [6] European Parliament and Council (2008) Recommendation 2008/C 111/01 on the establishment of the European Qualifications Framework for Lifelong Learning. Official Journal of the European Union 6.5.2008. (Last accessed on the 24th of November 2014) [http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008H0506\(01\)&from=EN](http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32008H0506(01)&from=EN)
- [7] ECTS Users' Guide. European Communities, Brussels, 2009, (last accessed on 24th of November 2014) http://ec.europa.eu/education/tools/docs/ects-guide_en.pdf
- [8] Richard de Lavigne, ECTS Credits and Methods of Credit Allocation, 2003 http://ci.univ-lille1.fr/english_version/pdf/credit_allocation.pdf

APPENDIX A - Abbreviations and Acronyms

CPD	Continuous Professional Development
CQMP	Clinically Qualified Medical Physicist
ESMPE	European School for Medical Physics Expert
EC	European Commission
ECTS	European Credit Transfer and Accumulation System
EFOMP	European Federation of Organisations for Medical Physics
EQF	European Qualifications Framework
EU BSS	European Union Basic Safety Standards
KSC	Knowledge, Skills, Competence
LLL	Life Long Learning
LO	Learning Outcome
MPE	Medical Physics Expert
NMO	National Member Organisation
QMP	Qualified Medical Physicist