

## **Module MPE01: Development of the profession and the challenges for the MPE (D&IR) in Europe**

### **ABSTRACT**

**Module Code:** MPE01

**Module Level:** EQF level 8

**Aims:** This module aims to help the future MPE (Diagnostic and Interventional Radiology - including fluoroscopically guided procedures performed outside the imaging department) acquire the knowledge, skills and competences necessary to exercise a leadership role within the profession in his own country and in Europe. The content of the module would address the development of the role of the MPE in D&IR in its entirety and would inform and provide a framework for discussions for all the other modules. *In the face-to-face phase participants will have the opportunity to discuss the major issues facing the profession directly with the present European leaders of the profession. The participants would also be updated with the latest EU directives, guidelines and activities impacting the role to ensure they are at the forefront of these developments.*

**Learning Outcomes:** At the end of the module the participants will be able to:

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| MPE01.01 | Take responsibility for researching, evaluating, leading, and offering vision for the development of the role of the MPE (D&IR,) in the ambit of European and national legislation and a holistic vision of healthcare. |
| MPE01.02 | Implement and evaluate strategic solutions to the challenges facing the MPE (D&IR) in own country and Europe.   |
| MPE01.03 | Evaluate the various models of management in terms of suitability for a Medical Physics Service and the issue of staffing levels.   |
| MPE01.04 | Take responsibility for the development of the role of the MPE (D&IR) in clinical governance in D&IR.   |
| MPE01.05 | Take responsibility for ethical issues in medical physics particularly in the areas of research and radiation protection in D&IR and apply them in practice.  |
| MPE01.06 | Discuss the role of the MPE (D&IR) in service development, health technology assessment (HTA), innovation and expert consultancy.   |
| MPE01.07 | Research, develop and lead the development of the role of the MPE (D&IR) in the education and training of medical physics trainees and other healthcare professionals.  |
| MPE01.08 | Manage the relationship of the MP/MPE with other healthcare professions in D&IR, with patients and the general public.  |
| MPE01.09 | Manage priorities regarding radiation protection research and medical physics input to clinical research projects needing the support of MPEs.  |
| MPE01.10 | Implement safety culture in their practice.   |
| MPE01.11 | Participate in networks for research and development at the European and international level.   |
| MPE01.12 | Take responsibility for the role of the MPE (D&IR) in accidental and unintended medical exposures in D&IR and radiation accidents.  |
| MPE01.13 | Interpret the significance of liaising with the Radiation Protection Expert   |

**Dates:** Application deadline is December 9<sup>th</sup> 2014. **The online phase will start Wednesday December 17<sup>th</sup> 2014, the Face-to-Face component will be in Prague 9 – 13 February 2015.** Late applications will be considered if places are available.

### Module Leaders:

Prof. Carmel J. Caruana (carmel.j.caruana@um.edu.mt)

Past EFOMP Chair for E&T and Head of Medical Physics at the University of Malta; areas of specialization are diagnostic and interventional radiology (ionising and non-ionising), radiation protection, medical devices and protection from physical agents, role development and E&T issues (over 30 journal/conference papers in this area). He led the development of the role definition and Education and Training chapters of the 'European Guidelines on the MPE' project and was EFOMP lead for the chapter for medical physicists in MEDRAPET (www.medrapet.eu). He also represented EFOMP on the Advisory Board of ENETRAP II (<http://enetrap2.sckcen.be/>).

Prof. Eliseo Vano (eliseov@med.ucm.es)

Full Professor of Medical Physics at the Complutense University in Madrid and head of the Medical Physics Service at the San Carlos Hospital. Advisor to the Spanish Ministry of Health for radiation protection in medical exposures. Chairman of the Medical Working Party on Medical Exposures of the Article 31 Group of Experts of the EURATOM Treaty. Chairman of the Committee on Protection in Medicine of the ICRP. IAEA consultant for radiation safety in diagnostic and interventional radiology.

### Faculty:

Prof Carmel J. Caruana PhD: Module leader

Prof Eliseo Vano PhD: Module leader

Prof Eduardo Guibelalde PhD: Coordinator 'European Guidelines on the MPE' project

Stelios Christofides PhD: Past President, EFOMP

Prof Peter Sharp PhD: President, EFOMP

Prof John Damilakis PhD: Vice-President and President-Elect, EFOMP

Stephen Evans MSc: Lead for staffing levels in the 'European Guidelines on the MPE' project and present Chairperson EFOMP Projects Committee

Prof Hilde Bosmans: Coordinator EUTEMPE-RX project

Prof Jim Malone: Chairman IEC SC62B Medical Imaging Equipment

**Delivery of the module:** The module will achieve its learning objectives using a combination of online and face-to-face readings, fora, presentations and discussions. The online component will consist of a series of sets of compulsory readings on topics related to the objectives. Each set will be accompanied by an online forum for difficulties and to promote reflection and discussion in preparation for the assessment. The online phase will be asynchronous so that participants would not need to take time off their clinical duties and there will not be a problem with time zones. If any synchronous learning is required this would be in the evening or weekend. Each presentation during the face-to-face will be presented by a leader in the area and will be followed by a discussion involving a panel made up of the present European leaders of the profession (CJ Caruana, E Vano, E Guibelalde, P Sharp, J Damilakis, S Christofides, S Evans, H Bosmans, J Malone). Module participants would be encouraged to put forward the issues they are facing in their own country so that we may create a harmonised approach. As preparation for the assessment, case studies will be discussed with the panel of European leaders. The face-to-face component will be over a period of 1 week (3 days learning, 1 day free for revision, 1 day for assessment). *All presentations will be sent to the participants 2 weeks before the start of the face-to-face phase.*

**Total participant effort time:** 80 hours



**Assessment Mode:** The assessment mode will consist of a 4 hour *open-book* examination consisting of 3 case scenarios of situations faced by the MPE (D&IR) in which candidates are expected to demonstrate that they have achieved sufficient vision to act as future leaders of the MPE (D&IR) profession and act as good role models for younger members of the profession. Participants are expected to back their arguments with quotes from EU directives and other documentation utilised during the module. Participants will be provided with practice sample case scenarios during the module. In addition, case studies will be discussed with the panel of European leaders during the face-to-face.

<b>MODULE DATA</b>		
<b>Module Homepage</b>	www.eutempe-rx.eu	
<b>Module Code</b>	MPE01	
<b>Module Leader/s</b>  Please limit CV to a max of 250 words and to what is relevant to this particular module.	<p>Prof. Carmel J. Caruana EFOMP and Head, Department of Medical Physics, Faculty of Health Sciences, University of Malta. carmel.j.caruana@um.edu.mt Past EFOMP Chair for E&amp;T and Head of medical physics at the Uni of Malta; areas of specialization are diagnostic and interventional radiology (ionising and non-ionising), radiation protection, medical devices and protection from physical agents, role development and E&amp;T issues (over 30 journal/conference papers in this area). He led the development of the role definition and E&amp;T chapters of the 'European Guidelines on the MPE' project and was EFOMP lead for the E&amp;T chapter for medical physicists in MEDRAPET. He also represented EFOMP on the Advisory Board of ENETRAP II.</p> <p>Prof. Eliseo Vano Radiology Department. Medical School. Complutense University of Madrid and San Carlos University Hospital Madrid eliseov@med.ucm.es Full Professor of Medical Physics at the Complutense University in Madrid and head of the Medical Physics Service at the San Carlos Hospital. Advisor to the Spanish Ministry of Health for radiation protection in medical exposures. Chairman of the Medical Working Party on Medical Exposures of the Article 31 Group of Experts of the EURATOM Treaty. Chairman of the Committee on Protection in Medicine of the ICRP. IAEA consultant for radiation safety in diagnostic and interventional radiology.</p>	
<b>Teaching Staff</b>  Teaching staff should be either recognised MPEs or in possession of a PhD. If not please contact the Secretary of the QAC.	<p>Prof Carmel J. Caruana PhD: Module leader Prof Eliseo Vano PhD: Module leader Prof Eduardo Guibelalde PhD: Coordinator 'European Guidelines on the MPE' project Stelios Christofides PhD: Past President, EFOMP Prof Peter Sharp PhD: President, EFOMP Prof John Damilakis PhD: Vice-President and President-Elect, EFOMP Stephen Evans PhD: Lead for staffing levels in the 'European Guidelines on the MPE' project and present Chairperson EFOMP Projects Committee Prof Hilde Bosmans: Coordinator EUTEMPE-RX project Prof Jim Malone: Chairman IEC SC62B Medical Imaging Equipment</p>	
<b>Candidate Assessment</b> (all assessments open book)	<b>Written Assessment (open book):</b>	A 4-hour paper with 4 case-study questions to choose 3.
	<b>Practical Assessment (open book):</b>	None
<b>Module Duration</b>	<b>Online phase</b> Asynchronous	The online component will be spread over a period of approximately 3 - 4 weeks and would require approximately 56 hours of reading and effort by the participants. The online phase will be asynchronous so that participants would not need to take time off

The TOTAL number of hours of participant effort should be about 80. (including lectures, reading of assigned compulsory texts, participation in online fora etc)	methods should be used whenever possible so that participants would not need to take time off their clinical duties and there will not be a problem with time zones. However synchronous methods (evenings or weekends only) should be used when crucial.	their clinical duties and there will not be a problem with time zones. If any synchronous learning is required this would be in the evening or weekend.
	<p><b>Face-to-face phase</b></p> <p>Must include 1 day for revision and 1 day for the assessment proper.</p>	<p>5 days: 3 days content delivery (24 hours), 1 day for revision, 1 day for assessment.</p> <p><i>All modules: All learning materials including presentations will be sent to the participants 2 weeks before the start of the face-to-face phase.</i></p>
<b>Date and location of Face-to-Face</b>	Prague 9 – 13 February 2015	
<b>Date of Assessment</b> Normally last day of face-to-face phase.	13 February 2015	
<b>Breakdown of participant effort time</b>	<b>Module Component</b>	<b>Estimated Time (approx.)</b>
	Online lectures, seminars, tutorials, fora	10 hours
	Online compulsory reading	46 hours
	Face-to-face lectures, seminars, tutorials, fora	24 hours (over 3 days)
	Face-to-face technical demonstrations	0 hours
	Face-to-face laboratory/clinical exercises	0 hours
	<b>Total participant effort time</b>	<b>80 hours</b>
<b>Free day for exam preparation day</b>	1 day	

	<b>Last day for assessment</b>	<b>4 hours</b>
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<b>PRE-REQUISITES FOR THE MODULE</b>	
<p><b>Minimum entry qualifications, training and years of experience for all modules</b></p> <p>Same for all modules</p>	<p>EQF Level 6 in Physics (BSc Physics or equivalent)</p> <p>Clinical Medical Physicists: EQF Level 7 in Medical Physics (MSc Medical Physics or equivalent) and 2 year equivalent clinical training in D&amp;IR</p> <p>Industry/Radiation Authority personnel: 2 year equivalent industry or radiation authority experience</p>
<p><b>Assumed previous KSC for all modules from the 'Inventory of Learning Outcomes for the MPE in Europe' (Annex I of the 'European Guidelines on the MPE')</b></p> <p>Same for all modules</p>	<p>GENERIC SKILLS : Generic Skills Required at EQF level 7</p> <p>KSC FOR THE MPE AS PHYSICAL SCIENTIST: All Knowledge learning outcomes to EQF level 7</p> <p>KSC FOR THE MPE AS A HEALTHCARE PROFESSIONAL: All Knowledge learning outcomes to EQF level 7</p> <p>KSC FOR THE MPE AS EXPERT IN CLINICAL MEDICAL RADIOLOGICAL DEVICES &amp; RADIATION PROTECTION: All Knowledge learning outcomes to EQF level 7</p> <p>KSC SPECIFIC FOR THE MPE IN DIAGNOSTIC &amp; INTERVENTIONAL RADIOLOGY: All Knowledge learning outcomes to EQF level 7</p> <p>The Skills and Competences included in the IAEA document 'Clinical Training of Medical Physicists Specializing in Diagnostic Radiology' (IAEA Training Course Series, 47, 2010) to EQF level 7.</p>
<p><b>Pre-requisite EUTEMPE-RX online summary modules for all modules</b></p> <p>Same for all modules</p>	<p>MPE01 Development of the profession and the challenges for the MPE (D&amp;IR) in Europe (online summary version accessible to all participants in all modules)</p>
<p><b>Additional pre-requisite EUTEMPE-RX online summary modules for this module</b></p> <p>Different for each module.</p>	<p>None required</p>

### MODULE CONTENT: AIM and SUMMARY LEARNING OUTCOMES

<b>Aim</b>	<p>This module aims to help the future MPE (Diagnostic and Interventional Radiology - including fluoroscopically guided procedures performed outside the imaging department) acquire the knowledge, skills and competences necessary to exercise a leadership role within the profession in his own country and in Europe. The content of the module would address the development of the role of the MPE in D&amp;IR in its entirety and would inform and provide a framework for discussions for all the other modules. <i>In the face-to-face phase participants will have the opportunity to discuss the major issues facing the profession directly with the present European leaders of the profession. The participants would also be updated with the latest EU directives, guidelines and activities impacting the role to ensure they are at the forefront of these developments.</i></p>	
<b>Summary Learning Outcomes</b> (10 – 15 learning outcomes which provide an overview of the KSC addressed in the module)	MPE01.01 MPE01.02 MPE01.03 MPE01.04 MPE01.05 MPE01.06 MPE01.07  MPE01.08 MPE01.09  MPE01.10 MPE01.11 MPE01.12 MPE01.13	<p>Take responsibility for researching, evaluating, leading, and offering vision for the professional development of the role of the MPE (D&amp;IR,) in the ambit of European and national legislation and a holistic vision of healthcare.</p> <p>Implement and evaluate strategic solutions to the challenges facing the MPE (D&amp;IR) in own country and Europe.</p> <p>Evaluate the various models of management in terms of suitability for a Medical Physics Service and the issue of staffing levels.</p> <p>Take responsibility for the development of the role of the MPE (D&amp;IR) in clinical governance in D&amp;IR.</p> <p>Take responsibility for ethical issues in medical physics particularly in the areas of research and radiation protection in D&amp;IR and apply them in practice.</p> <p>Discuss the role of the MPE (D&amp;IR) in service development, health technology assessment (HTA), innovation and expert consultancy.</p> <p>Research, develop and lead the development of the role of the MPE (D&amp;IR) in the education and training of medical physics trainees and other healthcare professionals.</p> <p>Manage inter-professional issues in D&amp;IR.</p> <p>Manage priorities regarding radiation protection research and medical physics input to clinical research projects needing the support of MPEs.</p> <p>Implement safety culture in their practice.</p> <p>Participate in networks for research and development at the European and international level.</p> <p>Take responsibility for the role of the MPE (D&amp;IR) in accidental and unintended medical exposures in D&amp;IR and radiation accidents.</p> <p>Interpret the significance of liaising with the Radiation Protection Expert</p>



**MODULE CONTENT: TARGET KSC TO BE DEVELOPED TO EQF LEVEL 8**  
**From the 'Inventory of Learning Outcomes for the MPE in Europe' (Annex I of the 'European Guidelines on the MPE')**

<p><b>KSC targeted in all modules</b></p> <p>These learning outcomes are common to and permeate all modules, although to a varying degree according to the topic of the module.</p>	<p>GENERIC SKILLS : All 'Generic Skills Required at EQF level 8'</p> <p>KSC FOR THE MPE AS PHYSICAL SCIENTIST: All Skills and Competences to EQF level 8</p> <p>KSC FOR THE MPE AS A HEALTHCARE PROFESSIONAL: All Skills and Competences to EQF level 8</p> <p>KSC FOR THE MPE AS EXPERT IN CLINICAL MEDICAL RADIOLOGICAL DEVICES &amp; RADIATION PROTECTION (AND OTHER PHYSICAL AGENTS AS APPROPRIATE): All KSC for Scientific Problem Solving Service to EQF level 8</p> <p>KSC SPECIFIC FOR THE MPE IN DIAGNOSTIC &amp; INTERVENTIONAL RADIOLOGY: All KSC for Scientific Problem Solving Service to EQF level 8</p>
<p><b>PRIMARY KSC targeted in this module</b></p> <p>These are the KSC which would be developed to Level 8 during this module. These should be mostly Skills and Competences. However, Knowledge learning outcomes should also be included when the knowledge normally acquired during Level 7 programmes is insufficient for the development of the skills and competences to level 8.</p> <p>The KSC codes from the 'European Guidelines on the MPE' should be inserted for easy reference.</p>	<p><b><u>KSC FOR THE MPE AS A HEALTHCARE PROFESSIONAL</u></b></p> <p>K1. Explain the functions of healthcare organizations, the way healthcare is organized (internationally, nationally and locally), principles of clinical governance and developments in healthcare policy.</p> <p>K3. Explain the role of Medical Physics Services in healthcare.</p> <p>K6. Explain and discuss the concepts of quality, safety / risk and cost-effectiveness as applied to healthcare.</p> <p>K7. Explain and discuss ethical and legal issues in healthcare relevant to the scope of the profession (e.g., research ethics, data protection, privacy, dignity, ethical governance).</p> <p>K8. Discuss those aspects of healthcare psychology and sociology relevant to the profession.</p> <p>K9. Explain the technological infrastructure required for quality service within own future area of medical physics.</p> <p>K10. Explain the European and national legal frameworks, regulations, guidelines and codes-of-practice impacting the role of the MPE.</p> <p>K11. Explain briefly European and national legal frameworks, regulations, guidelines and codes-of-practice impacting the practice of other professions with whom the MPE interacts.</p> <p>K12. Discuss the development of the MPE profession in both the local and European context.</p> <p>K13. Discuss the principles of healthcare management.</p> <p>K15. Discuss the principles and processes of quantitative and qualitative research involving human subjects.</p> <p>S1. Communicate effectively clinical information, advice, instruction and professional opinion to patients, colleagues, other healthcare professionals, support staff, service users, relatives, carers, comforters and volunteers in medical research within own area of medical physics practice using appropriate terminology.</p> <p>S2. Establish the necessary communication links and relations with other healthcare professionals and organizational units related to own area of medical physics practice.</p>

S4. Survey EU Directives, national regulations and guidelines and recommendations from national and international organizations related to own area of medical physics.

S5. Make best use of available resources in the interest of patients and society.

C1. Practise responsibly within the legal, regulatory and ethical boundaries of the profession.

C3. Collaborate with other healthcare professionals, support staff and service users, relatives, carers and comforters within own area of medical physics practice.

C4. Take responsibility for the management of own workload to ensure effective and efficient input to the work of the healthcare team in own area of medical physics practice.

C5. Organise the various aspects of the routine service within own area of medical physics practice.

C6. Work responsibly within national / local professional codes of practice and own competence limitations.

C7. Take responsibility for appropriate behaviour towards colleagues, patients and relatives as stipulated by organizational policies and national legislation.

C8. Take responsibility for own input within mono-disciplinary and multi-disciplinary research teams.

C9. Take responsibility for making the best use of available resources to provide optimum healthcare to patients and members of society.

C10. Assume responsibility for timely action (within own limitations) to prevent and respond to adverse events.

C11. Assume responsibility to ensure that all activities are based on current best evidence or own scientific research when the available evidence is not sufficient.

C12. Take responsibility to maintain one's knowledge and skills current through an appropriate continuous professional development programme.

C13. Facilitate learning of peers, other healthcare professionals, students (including Medical Physics trainees).

C14. Take responsibility for the development of effective, safe and efficient teams (including multi-professional teams) in own area of medical physics practice.

C15. Show respect towards the ethical, religious and cultural perspectives of patients.

C16. Adhere to the Code of Ethics of the profession.

C17. Assume responsibility for ethical issues associated with research involving human subjects.

**KSC FOR THE MPE AS EXPERT IN CLINICAL MEDICAL RADIOLOGICAL DEVICES & RADIATION PROTECTION (AND OTHER PHYSICAL AGENTS AS APPROPRIATE)**

**Educ. of Healthcare Professionals (including Medical Physics trainees)**

K119. Explain statutory and institutional requirements for Medical Physics Services with respect to the education and training of healthcare professionals (including Medical Physics trainees) in own area of medical physics practice.

K120. Discuss the application of the principles of knowledge transfer to the case of healthcare professionals.

- K121. Discuss the principles of modern adult pedagogy and apply them to the medical device and ionizing radiations and other physical agents educational needs of healthcare professionals (including continuous professional development activities) and including training associated with the introduction of new devices and techniques.
- K122. Discuss methods for developing and delivering ionizing radiations and other physical agents education and training learning outcomes for addressing the learning needs of specific healthcare professionals in specific clinical environments.
- K123. Discuss the factors which impact the choice of learning outcomes and methods of knowledge transfer to the case of medical device and ionizing radiations and other physical agents knowledge for specific healthcare professionals in specific clinical environments (such as previous education and training and the usability and safety features of devices).
- K124. Explain the content of appropriate programmes for healthcare professionals involving the optimised clinical use of medical devices and protection from ionizing radiations and other physical agents in own area of medical physics practice .
- S67. Set up an inventory of learning outcomes tailored to the specific learning needs of specific healthcare professionals in specific clinical environments in conjunction with the leaders of the respective healthcare professions.
- S68. Prepare effective and efficient modes of knowledge transfer activities specific to the specific learning needs of specific healthcare professionals in specific clinical environments in conjunction with the leaders of the respective healthcare professions.
- S69. Prepare effective modes of assessment appropriate for the various healthcare professions.
- S70. Carry out own pedagogical research when the evidence base for education and training of healthcare professions is insufficient.
- C66. Take responsibility for statutory and institutional requirements for Medical Physics Services in own area of medical physics practice with respect to the Education (including continuous professional development) of Healthcare Professionals (including Medical Physics trainees).
- C67. Take responsibility for the education of healthcare professionals (including Medical Physics trainees) regarding the optimised clinical use of medical devices and safety from ionizing radiations and other physical agents in specific clinical environments in own area of medical physics practice.
- C68. Take responsibility for the education of healthcare professionals (including Medical Physics trainees) in performing QC procedures related to medical devices in own area of medical physics practice.
- C69. Take responsibility for the education of healthcare professionals (including Medical Physics trainees) regarding protection from ionizing radiations and other physical agents including the use of personal dose monitors and personal protection equipment.
- C70. In conjunction with other healthcare professionals take responsibility for ensuring that referrers are knowledgeable of current referral criteria in own area of medical physics practice.
- C71. Take responsibility for raising public awareness of safety issues regarding ionizing radiations and other physical agents in own area of medical physics practice.

**Health Technology Assessment**

- K125. Explain statutory and institutional requirements for Medical Physics Services in own area of medical physics practice with respect to Health Technology Assessment (HTA).
- K126. Explain the principles of HTA as applied to medical devices and procedures in own area of medical physics practice.
- K127. Explain the steps for the carrying out of a HTA, including use of primary data and secondary sources.
- K128. Define the roles and responsibilities of all professionals involved in an HTA project in own area of medical physics practice.
- K129. Explain the issues that should be considered in an HTA project in own area of medical physics practice.
- K130. Explain the value of HTA reports for policy makers at the European, national, regional and facility levels.
- K131. Explain the importance of HTA reports in controlling cost in relation to benefit for the considered technology in own area of medical physics practice.
- K132. Apply research methodologies and statistical techniques used at the interface between physical and biomedical science in clinical trials involving medical devices and/or ionizing radiations and other physical agents.
- K133. Discuss the ethical issues associated with clinical trials involving medical devices and/or ionizing radiations and other physical agents.
- K134. Explain how to apply for approval from a hospital and /or university based ethics committee for a clinical trial involving medical devices and /or ionizing radiations and other physical agents.
- K135. Explain the fundamentals and design models of clinical trials in own area of medical physics practice.
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- S71. Perform a systematic review of the existing evidence base to evaluate the clinical effectiveness and safety of a new medical device or new procedure involving medical devices / ionizing radiations and other physical agents.
- S72. Communicate HTA reports to policy makers.
- S73. Interpret the statutory and institutional requirements of Medical Physics Services in HTA activities.
- S74. Design and monitor the medical physics components of clinical trial protocols in own area of medical physics practice.
- S75. Perform statistical analysis and report on clinical trials involving medical physics services.
- S76. Assemble a suitable physics team for a specific HTA project.
- S77. Conduct the technical components of an HTA project in own area of medical physics practice.
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- C72. Take responsibility for statutory and institutional requirements for Medical Physics Services in own area of medical physics practice with respect to Health Technology Assessment (HTA).
- C73. Use the methodologies of HTA to carry out a HTA in conjunction with other healthcare professionals.
- C74. Take responsibility for the technical component of a HTA related to medical devices and /or ionizing radiations and other physical agents.
- C75. Take responsibility for the technical component of a clinical trial related to medical devices and /or ionizing radiations and other physical agents.
- C76. Take responsibility and communicate with relevant authorities with regards to safety from ionizing radiations and other physical

agents in the case of clinical trials.  
 C77. Apply for approval from a hospital and /or university based ethics committee for a clinical trial involving medical devices and /or ionizing radiations and other physical agents.  
 C78. Take responsibility for the evaluation of a clinical trial protocol.  
 C79. Ensure good clinical practice (GCP) compliance of activities within clinical trials.  
 C80. Advise on and take responsibility for the preclinical device aspects of the ethical review of a clinical trial.  
 C81. Assume the responsibility of statistical and other mathematical data processing and recording in a clinical trial.

**Innovation**

K136. Explain statutory and institutional requirements for Medical Physics Services with respect to Innovation in own area of medical physics practice.  
 K137. Define innovation as the development of new devices (including software), modification of existing devices (including software) and the development of new techniques using devices for the solution of hitherto unresolved clinical problems.  
 K138. Explain the importance of ongoing horizon scanning for new and emerging technologies.  
 K139. Explain the methodology of horizon scanning for new and emerging technologies.  
 K140. Discuss the opportunities for innovation in own area of medical physics practice.

S78. Apply the methodology of horizon scanning (including survey of specific information sources) for new and emerging technologies to own area of medical physics practice.

C82. Take responsibility for statutory and institutional requirements for Medical Physics Services with respect to Innovation in own area of medical physics practice.  
 C83. Take responsibility for the development of new devices (including software) and modification of existing devices (including software), including their implementation and evaluation in response to clinical needs in own area of medical physics practice.  
 C84. Take responsibility for legal issues involved in the development of medical devices (including software) in own area of medical physics practice.

**KSC SPECIFIC FOR THE MPE IN DIAGNOSTIC & INTERVENTIONAL RADIOLOGY**

**Education of Healthcare Professionals (including Medical Physics trainees) in D&IR**

K113. Explain statutory and institutional requirements for Medical Physics Services in Diagnostic and Interventional Radiology with respect to Education of Healthcare Professionals (including Medical Physics trainees).  
 K114. Discuss the particular ethical issues involved in expert consultancy in the education of healthcare professionals (including Medical

	<p>Physics trainees) in areas involving a high level of collective patient doses.</p> <p>C30. Take responsibility for statutory and institutional requirements for Medical Physics Services in Diagnostic and Interventional Radiology with respect to Education of Healthcare Professionals (including Medical Physics trainees).</p> <p><b>Health Technology Assessment in D&amp;IR</b></p> <p>K115. Explain statutory and institutional requirements for Medical Physics Services in Diagnostic and Interventional Radiology with respect to Health Technology Assessment.</p> <p>K116. Discuss the particular ethical issues involved in HTA in areas involving radiation, in particular ionizing radiation.</p> <p>K117. Explain how research medical exposures are managed in the context of Diagnostic and Interventional Radiology including the processes of ethical review and clinical trials administration and governance (GCP) and the use of appropriate dose constraints.</p> <p>C31. Take responsibility for statutory and institutional requirements for Medical Physics Services in Diagnostic and Interventional Radiology with respect to Health Technology Assessment.</p> <p><b>Innovation in D&amp;IR</b></p> <p>K118. Explain statutory and institutional requirements for Medical Physics Services in Diagnostic and Interventional Radiology with respect to Innovation.</p> <p>C32. Take responsibility for statutory and institutional requirements for Medical Physics Services in Diagnostic and Interventional Radiology with respect to Innovation.</p>
<p><b>SECONDARY KSC targeted in this module</b> (EQF Level 8)</p> <p>These are the KSC that are included in the module but would be given less attention owing to time constraints.</p> <p>Please insert the KSC code from the 'European Guidelines on the MPE'</p>	<p><b><u>KSC FOR THE MPE AS EXPERT IN CLINICAL MEDICAL RADIOLOGICAL DEVICES &amp; RADIATION PROTECTION (AND OTHER PHYSICAL AGENTS AS APPROPRIATE)</u></b></p> <p><b>Expert Consultancy</b></p> <p>K114. Explain statutory and institutional requirements for Medical Physics Services in own area of medical physics practice with respect to Expert Consultancy.</p> <p>K115. Explain the role of a consultant.</p> <p>K116. Explain the role of scientists as consultants in healthcare.</p> <p>K117. Explain the general role of the MPE as consultant in own area of medical physics practice.</p> <p>K118. Discuss the specific ethical issues involved in delivering a consultancy service in own area of medical physics practice (including</p>

<p>project KSC Inventory.</p>	<p>conflict of interest issues).</p> <p>S65. Apply MPE consultancy skills to specific scenarios in own area of medical physics practice.  S66. Identify and manage ethical issues involved in delivering a consultancy service in own area of medical physics practice (including conflict of interest issues).</p> <p>C63. Take responsibility for statutory and institutional requirements for Medical Physics Services in own area of medical physics practice with respect to Expert Consultancy including responsibility for associated ethical issues commensurate with level of personal expertise.  C64. Produce and/or audit reports as an independent provider for organizations other than one's own.  C65. Design and evaluate continuous professional courses in own area of medical physics practice for organizations other than one's own.</p> <p><b><u>KSC SPECIFIC FOR THE MPE IN DIAGNOSTIC &amp; INTERVENTIONAL RADIOLOGY</u></b></p> <p><b>Expert Consultancy in D&amp;IR</b></p> <p>K111. Explain statutory and institutional requirements for Medical Physics Services in Diagnostic and Interventional Radiology with respect to Expert Consultancy.  K112. Discuss the particular ethical issues involved in expert consultancy in areas involving a high level of collective dose.</p> <p>C29. Take responsibility for statutory and institutional requirements for Medical Physics Services in Diagnostic and Interventional Radiology with respect to Expert Consultancy.</p>
<p><b>NEW KSC which are NOT INCLUDED</b> in the 'Inventory of Learning Outcomes for the MPE in Europe'.</p>	<p>Liase with the Radiation Protection Expert.</p>

## OUTLINE TEACHING PLAN

**Final detailed teaching plan to be delivered to the QAC electronically 30 days before the start of the online phase of the module**

### Online phase

### ONLINE PHASE: PRELIMINARY PROGRAMME

The online component will consist of a series of sets of compulsory readings on the topics below. Each set will be accompanied by an asynchronous online forum with prompting questions and responses to difficulties to promote reflection and discussion in preparation for the assessment.

#### Topics

1. The functions of D&IR departments (including imaging outside Radiology departments) within healthcare provision, today and tomorrow.
2. Milestones in the development of the role of MPE in European legislation and documentation.
3. Attributes of quality health care and the role of the MPE (D&IR).
4. The various models of healthcare management and clinical governance and the role of the MPE (D&IR).
5. Health care ethics and the MPE (D&IR) (e.g., research ethics, data protection, privacy, dignity, ethical governance). Ethical aspects of the medical use of ionising radiation in routine practice and research.
6. Components of quality professional practice.
7. European and international recommendations, guidelines, technical documentation and codes-of-practice impacting the role of the MPE (D&IR) e.g., ICRP, ICRU, IEC, IAEA, CENELEC, EFOMP, AAPM etc.
8. Qualification and curriculum frameworks for the MPE (D&IR).
9. Project management for MPEs.
10. Principles of curriculum development, pedagogical and communication skills for MPEs. Curriculum development for the medical physics profession. Teaching other healthcare professionals.
11. Management of a Medical Physics Service in D&IR:
  - Models of management and leadership
  - Equipment management
  - Staffing levels
12. Medical Sociology for the MPE: role development, inter-professionalism etc
13. Occupational and Organizational Psychology for the MPE (D&IR)



	<p>14. Qualitative research methodologies (research for role development, professional issues, service development, management and education).</p> <p>15. The role of the MPE in service development, health technology assessment (HTA), innovation and expert consultancy.</p> <p>16. Strategic planning skills for MPEs.</p>
<p><b>Face-to- Face Phase</b></p>	<p style="text-align: center;"><b>FACE-TO-FACE PHASE: DAY-TO-DAY PRELIMINARY PROGRAMME</b></p> <p style="text-align: center;"><b><u>Prague 9 – 13 February 2015</u></b></p> <p><i>Each presentation will be presented by a leader in the area and will be followed by a discussion involving a panel made up of the present European leaders of the profession (CJ Caruana, E Vano, E Guibelalde, P Sharp, J Damilakis, S Christofides, S Evans, H Bosmans, J Malone). Module participants would be encouraged to put forward the issues they are facing in their own country so that we may create a harmonised approach. As preparation for the assessment case studies will be discussed with the panel of European leaders.</i></p> <p style="text-align: center;"><b>Monday 9<sup>th</sup> February: <u>Role of the MPE: where is D&amp;IR heading and what will be our role?</u></b></p> <p><b>Introduction:</b> CJ Caruana, E Vano</p> <p><b>Presentations</b></p> <ol style="list-style-type: none"> <li>1. The role of the MPE before 2013/59/Euratom and before the ‘European Guidelines on the MPE’ (E Guibelalde, E Vano)</li> <li>2. The role of the MPE in 2013/59/Euratom: rationale behind the provisions relating to the MPE, update on developments, explaining to local health and radiation authorities, liaising with the radiation protection expert, non-medical exposures (E Vano)</li> <li>3. Elaboration of the role of the MPE (D&amp;IR) in the ‘European Guidelines on the MPE document’ (CJ Caruana)</li> <li>4. The role of the MPE in fluoroscopy guided procedures performed outside the imaging department (E Vano)</li> <li>5. Non-ionising radiations: EFOMP Policy Statement 14: The role of the Medical Physicist in the management of safety within the MRI environment (CJ Caruana)</li> <li>6. The educational role of the MPE:             <ul style="list-style-type: none"> <li>- Education and training of Medical Physicists: The qualification and curriculum development frameworks for the MPE in the ‘European Guidelines on the MPE document’ and EFOMP Policy Statement 12.1.</li> <li>- The education of physicians and the healthcare professions (CJ Caruana)</li> </ul> </li> </ol>

**Case studies for discussion between participants and panel of experts**

Case Study 1: A member of the radiology management team comes up to you stating: “MPEs are not important in D&IR, we don’t have the high doses that one finds in radiation oncology”. How would you tackle it?

Case study 2: The head of radiology clinic comes up to you and says “We don’t need an MPE here as our doses are according to national DRLs”. How would you tackle it?

Case study 3: A radiologist has opened a new clinic in which he has 1 digital x-ray machine, a mammography unit and a CT scanner. He says he does not need the service of an MPE as the facility is too small. How would you tackle it?

**Tuesday 10<sup>th</sup> February: Management issues for MPEs**

**Presentations**

1. Setting up, organizing and managing a Medical Physics Service for D&IR (E Vano)
2. Staffing levels for Medical Physics Services as in the ‘European Guidelines on the MPE document’: examples of use in D&IR (S Evans)
3. EFOMP Policy Statement 15: Recommended Guidelines on the Role of the Medical Physicist within the Hospital Governance Board (P Sharp)
4. Standards for Medical Physics Services and the creation of a safety culture (S Christofides)
5. Managing the relationship of the MP/MPE with other healthcare professions in D&IR, with patients and the general public. (J Damilakis)
6. Professional ethics (including issues associated with outside consultancy and research) and the ethics of radiation protection (J Malone)
7. Managing accidental and unintended medical exposures in D&IR and radiation accidents (E Vano)
8. Strategic planning: A SWOT analysis for the MPE (CJ Caruana)

**Case studies for discussion between participants and panel of experts**

Case study 1: You have noticed that one of the interventional cardiologists in your hospital tends to produce high cumulative KAPs and long fluoroscopy times. He is averse to other professions ‘telling him what to do’. How would you tackle it?

Case study 2: You want to employ another medical physicist. The manager of the department of radiology tells you that you have enough staff. How would you tackle it?

Case study 3: It has come to your attention that an equipment procurement committee has been set up in your department. You have not been asked to sit on the committee. How would you tackle it?

**Wednesday 11<sup>th</sup> February: Developing, publicising and internationalising the role of the MPE**

**Presentations**

1. The involvement of the MPE at the national, European and international level in the development of medical radiation protection (E Vano)
2. Involvement yourself in IEC SC62B Medical Imaging Equipment (J Malone)
3. Involving yourself in European projects. What are the opportunities? How can you work with EFOMP (S Evans)
4. Combining clinical work, research and innovation - a case study from Belgium (H Bosmans)
5. Combining clinical work, research and innovation - a case study from Spain (E Vano)
6. Going public – raising the profile of the profession within and outside healthcare. How can we raise the public profile of the profession? How can we link this with patient radiation protection issues - the MPE as patient and population advocate in the area of Medical Radiation Protection(CJ Caruana)

**Case studies for discussion between participants and panel of experts**

Case study 1: You have a good idea for a project, you have discussed it with your colleagues but have found little support and the head of the department says there's no money. How would you tackle it?

Case study 2: There has been a radiological incident at your hospital. A child had a head CT scan and the next day a severe erythema appeared on the face. It ended up as headlines in the newspapers. You are involved in the investigation and need to deal and communicate with other healthcare professions and the media. How would you tackle it?

Case study 3: You are heavily involved in clinical work, doing research and taking part in two European projects with EFOMP. You cant manage and need to find a way. How would you tackle it?

**Thursday 12th February: Free day for personal study**

Carmel J Caruana will be available to answer and help the participants with difficulties 09:00 – 12:00.

**Friday 13<sup>th</sup> February: Assessment Day**

09:00 – 13:00 A 4-hour open-book exam with 4 case-study questions to choose 3.