



The river [Ticino](#) and the Old Bridge of [Pavia](#)



[The University of Pavia](#)

Information for applicants:

- no course fee.
- 15 free lodgings in Pavia colleges will be available during the one-week face-to-face part of the module.
 - Participants who want to be considered for the free lodging should send a separate request together with the application to the local organiser with a justification of the request.
 - Otherwise participants will need to arrange and pay for hotel accommodation in Pavia.
- travel and meals costs are covered by each participant.
- accreditation requested for the Italian CPD (ECM) and EFOMP CPD systems

Application Form:

People wishing to enrol should download the form from:

<http://www.eutempe-rx.eu/index.php/more-news/109-enrolment-form>

and submit it to: info@eutempe-rx.org

with copy, including the request for free lodging in university halls, to the Director of the module, Professor Andrea Ottolenghi, at: eutempe.pavia@pv.infn.it

The deadline for applications is 12th February 2015:

- confirmation of the acceptance to the course and of the free lodging will be sent to the applicant.
- place in the module is held by the organiser if the applicant confirms his participation
- for any questions please write an email to: eutempe.pavia@pv.infn.it



**Become a Medical Physics Expert in Radiology
with**



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[EUTEMPE-RX](#) provides a series of teaching modules expected to be accredited for the award of Medical Physics Expert in Radiology in all EU Member States

**RADIATION BIOLOGY
for
MEDICAL PHYSICISTS**

On-line part:

- Available from the end of February, 2015
- To be completed before the face-to-face part

Face-to-face part: 13th - 18th April, 2015

Physics Department, University of Pavia, Via Bassi 6,
Pavia, Italy

Course open in particular to:

Diagnostic Medical Physicists, medical device companies or radiation protection authorities

Module Aims and Outcomes:

Aims: This module aims to help the future MPE (Diagnostic Radiology) acquire the knowledge, the skills, and the competences necessary for a thorough understanding of the biological response of humans to radiation exposure as well as of the radiobiological basis for estimating subsequent risks.

Learning outcomes: In particular, at the end of the course, the participants will be able to:

- Provide advice on the risks to individual patients from planned and unplanned exposures to ionizing radiation
- Provide counselling to patients who have been exposed to ionizing radiation
- Provide advice on the optimization of medical exposures so as to minimize the risk to the patient
- Provide advice on the occupational risks from the use of ionizing radiation in interventional procedures
- Participate as part of a multidisciplinary team planning research into the risks from exposures to ionizing radiation
- Provide training to medical staff on the radiobiological basis of the risks from the use of ionizing radiation

The Module Description:

The module is structured in two parts.

Part 1. The e-learning course will be online from the end of February 2015. The course will consist of slides and interactive content and is primarily based on self-learning on own schedule by reading recommended book chapters (free download) and papers on the 9 topics. There will also be video conferencing and an online forum. Online course requires about 50 hours. The e-learning course is a prerequisite for the face-to-face course, and will provide an introduction to the radiobiological features of radiation effects on humans, their dependence on organ dose, age, sex, their latency, their clinical features and diagnostic and prognostic criteria and their impact on the quality of life.

Part 2. The face-to-face course will discuss the topics taught in the e-learning part in the context of specific exposure scenarios and potential health effects, for example:

- A young woman of 32 years is diagnosed with breast cancer. As a girl of 10 years she had several CT and interventional examinations of the thorax for suspected cardiac disorders. What to do? What is the probability that this cancer was induced by the CT radiation?
- A senior cardiologist who had performed numerous interventional procedures is found to have exceeded occupational dose limits. What are his risks? What has to be done?

Assessment. Written assignment on Saturday, 18th April.

Topics (e-learning)

- Basic radiation biology and physics (e.g. radiation effects on DNA, chromosomes and cells)
- Human radiation genetics
- Radiation effects on the developing embryo and fetus
- Radiation-induced cancer: mechanisms and epidemiology
- Radiation-induced cancers after medical radiation exposures
- Cardiovascular radiation effects
- Radiation effects in the brain and the eyes
- Important effect modifications: dose fractionation, dose rate, time, age at exposure, attained age
- Dose specification and risk estimation in situations of very inhomogeneous dose distribution

Topics (face-to-face)

- Introduction and outline of the course
- Basic radiation biology revision
- Medical manifestations of radiation-induced health disorders
- Radiation-induced cancer risk
- Risk of radiation-induced heritable diseases
- Radiation effects from exposure in utero
- Management of radiation accidents
- Occupational radiation risks
- Cardiovascular and other non-cancer risks from low-dose radiation exposures