

# EFOMP - European School for Medical Physics Experts (ESMPE) Statistics edition 2020

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Do statistics frighten you, or just bore you? Do you find it difficult to understand statisticians? Do you know the difference between a standard error and a standard deviation? Well, as a scientist, statistics are an important part of your professional work; whether you need to use them in designing and analysing experiments or in interpreting other people's research.

EFOMP, in collaboration with the Hellenic Association of Medical Physics, announces a 3-day course, Statistics in Medical Physics, as part of their European School for Medical Physics Experts. The course is endorsed by ESTRO, ESMRMB and EuSOMII.

So, what skills will you learn? The school opens with consideration of how to design an experiment and analyse the resulting data. For a medical physicist an important question is often how one evaluates a diagnostic test. This is addressed by a session dealing with the trade-off between sensitivity and specificity utilising ROC analysis.

If you want to examine the source of differences between two or more variables in an experiment, then you will need to use applied regression analysis. In the afternoon lecturers will talk about the application of analysis of variance and of covariance together with worked examples from medical physics. If the dependent variable is binary (e.g. alive/dead, yes/no) then logistic regression is needed and a discussion of this, together with examples from visual grading experiments, completes the day.

If your experiment involves two or more possible variables, then data analysis requires the application of multiple linear regression. This, together with worked examples, forms the start of the second day. How you assess the success of treatment may be addressed by the use of survival analysis and I will be talking about how to create and interpret survival curves.

The school finishes with a series of presentations on radiomics, dosimetry and radiotherapy. In radiomics the question of feature evaluation and quality by statistical methods is explored. Quality is again a theme in dosimetry, looking at how uncertainties and the related quality of measurements are handled using statistical techniques. In radiotherapy the problem of agreement such as in dose distributions and volume estimations are investigated.

Registration is via the [EFOMP website](#)