

## **COURSE: INSTRUMENTAL ANALYSIS IN CLINICAL CHEMISTRY**

### **Course content:**

Fluorimetry - Chemiluminescence: Principles, applications in biomedical research and clinical analysis, electrochemistry - potentiometry ,applications in clinical analysis - Conductimetry - Biosensors, mass spectrometry - atomic absorption immunoassays - Fundamentals - Non-isotopic labeling systems in immunoassays - Methods for labeling biomolecules - Enzymes-tracers - methodology, special techniques, fluorescence energy transfer systems, homogeneous and heterogeneous systems - Examples of automated immunoassay systems - Applications of immunoassays in clinical analysis, chromatography - Liquid chromatography - Fundamentals - on-line techniques (GC-MS, LC-MS) - applications in clinical analysis, spectrophotometry - Principles of quantitative spectrophotometry, instrumentation, methodology, special techniques, applications in clinical analysis - Densitometry, reflective spectrophotometry, flow cytometry - Fundamentals, instrumentation, methodology, special techniques - applications in clinical analysis, Confocal Microscopy - Fundamentals, treatment outcomes, methods to determine and quantify chromosomal lesions: Fundamentals, identification and assay of chromosomal lesions: Biological dosimetry assessment and sensitivity of ionizing radiation, Fundamentals of ray crystallography x - Application for the study of protein structure - Modern methods of protein analysis (mass spectrometry and biosensors), DNA microarray - Fundamentals, processing results - applications in clinical analysis, Transgenic animals - Fundamentals and Applications, Nuclear Magnetic Resonance (NMR) - Fundamentals, Instrumentation, methodology, special techniques - Applications in clinical analysis.

## LECTURERS

### **Faculty Members:**

Department of Chemistry:

*E. Lianidou* (coordinator), Professor,

*P. Ioannou*, Professor,

*M. Koupparis*, Professor,

*E. Archontaki*, Ass.Professor,

*N. Thomaidis*, Ass.Professor,

*A. Economou*, Assoc. professor

School of Pharmacy:

*M. Mikros* Professor

Collaborators:

*B. Aidinis*, Researcher, Research Center Fleming,

*G. Panagiotou*, Researcher, Research Center Fleming,

*M. Vlasi*, Researcher, NCSR Demokritos,

*G. Pantelias*, Researcher, NCSR Demokritos,

*G. Terzoudi*, Researcher, NCSR Demokritos,

*K. Psara*, Clinical Chemist, Evangelismos Hospital,

*M. Thomaidou*, Researcher, Institute Pasteur

### **ASSESSMENT METHOD:**

Written exam