Education and Culture DG
Lifelong Learning Programme

HELLENIC REPUBLIC
UNIVERSITY OF CRETE

OPTICAL IMAGING

INTENSIVE PROGRAMME

Heraklion, Crete, Greece – July 5 to 16, 2010

THE PROGRAM

The Optical Imaging Intensive Course (OpI) is part of a joint master program entitled European Master for Molecular Imaging (EMMI), which has been funded to be organized together with the Universities: Universite Paris Sud -Paris11, Universiteit Antwerp and Universita degli studi di Torino, in the frame of the program Erasmus-Curriculum Development and a future enrollment to Erasmus Mundus. This master program is unique in each context and organization, pioneering the education of future scientist in an emerging field affecting modern Biology and Medicine. Furthermore, the University of Crete, being a regional educational institute, gets the opportunity to collaborate with central universities from member states as described above. The field of study lies within the general field of Sciences and in a highly multidisciplinary approach and technology. Each student of EMMI involved in the OpI after the successful conclusion of the course and evaluation procedure will receive 6 ECTS credits.

PARTICIPATING INSTITUTIONS

1. University Paris Sud XI, France

2. University of Antwerp, Belgium

3. University of Turin, Italy

4. University of Cologne, Germany

5. Leiden University, The Netherlands

6. Technical University of Munocch

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In collaboration with:

Institute of Molecular Biology and Biotechnology – IMBB

Institute of Electronic Structure and Laser – IESL

THE PLACE

Foundation for Research and Technology - Hellas (FORTH),

IMBB, FORTH Amphitheater, Heraklion, Crete

PROJECT BACKGROUND AND AIMS

The proposed project concerns the multidisciplinary, theoretical and practical-experimental training in optical imaging methods and the importance of such approaches to the study of biological phenomena and the applications in basic biological research and the translation to healthcare. The teachers are members of a consortium that has organized a joint European graduate program entitled European Master in Molecular Imaging, which is intended to transform to an Erasmus Mundus program. The master program is dedicated to teach the future scientists who will advance the molecular biology and molecular medicine fields with great impact to medical practice. Optical imaging technologies play a vital role in the field and potentially will become the leading methodologies for in vivo imaging.
The trainees will be graduate students in relevant fields from the partner institutions and will greatly benefit from the attained experience in understanding and usage of optical imaging methods in several fields of basic and applied research in biology, biomedicine and biophotonics.
The program will be divided in a morning lecture session and the afternoon experimental training session on the same topic. Students will have to prepare homework in the form of written reports and the final assessment will be based on written examinations on the final

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day of the course. They will also have to complete evaluation questionnaires that will be seriously considered for the improvement and preparation of future intensive courses. Expected outcomes will be published on the dedicated website and will be available to all the partner institutions. The project's innovation lies on the participation of teachers and students from different states and different graduate programs as well as on it's multidisciplinary nature. The students and teachers come from various scientific fields such as Physics, Biology, Chemistry, Engineering and Computer Science showcasing the multidisciplinarity of the proposed project. The students that will attend the course and successfully conclude the evaluation criteria will receive six (6) ECTS credits. The study program will be fully recognized by the partner institutions, a high priority of the Life Long Learning program.

SUMMARY

Recent advances in Molecular Biology and genetics as well as biological applications of similar developments in photonics, theoretical physics and engineering offer new powerful capabilities to study and monitor complex biological phenomena at the organism, cell and molecular level. Importantly various technologies that monitor such processes in real time in vivo are now in use and have an important impact in fundamental scientific understanding and useful diagnostic and therapeutic applications. This course will provide a multidisciplinary theoretical and practical training for graduate students in relevant fields, in many modern -well established or currently developing technologies. Emphasis will be in animal, cell and molecular biology topics and technologies and the way they cross talk or are complemented by the use of fluorescent microscopy, spectroscopy, chemiluminescence, flow cytometry, use of fluorophores, quenching, resonance, photobleaching, cell sorting, fluorescent tomography, intravital microscopy e.t.c.