

ORGANIZATION

U. PORTO
FACULDADE DE CIÊNCIAS
UNIVERSIDADE DO PORTO



WITH THE COOPERATION OF

Hospital Geral de Santo António, EPE

The aim of this School is to present in a unified way the theoretical basis and design tools for modelling and control of physiological systems with emphasis on biomedical applications.

Post-graduate students in Biomedical Engineering and affine areas, in a broad sense, including Electrical and Mechanical Engineering, Mathematics, Physics and Computer Science. Post-graduate students in the areas of Biology, Medical and Veterinary Sciences are also welcome. Both PhD students and Master (second cycle) students will find motives of interest.

Modern developments in the technology of sensors and actuators for biomedical systems allow the possibility of application of information processing methods to biomedical problems related to health care. On the other side, the full exploitation of these possibilities requires powerful methodologies and theories for monitoring and control design. This School aims at presenting an introduction to such methods with a strong interplay with actual clinical applications. For that sake an interdisciplinary approach is followed with lectures given by biomedical and control engineers, medical doctors and applied mathematicians.

The course comprises lectures covering the **following subjects:**

- › Knowledge extraction and modelling in biomedical systems
- › Basic and advanced control for drug delivery systems
- › Compartmental models
- › Sensors and signal processing
- › Fault tolerance
- › Applications and clinical case studies
(e.g. anaesthesia, neuromuscular blockade, cancer therapy, diabetes, HIV1)

2 + 3 MAY 2007

PORTO PORTUGAL

Sponsored by NiSIS - NATURED INSPIRED SMART INFORMATION SYSTEMS, FP6

<http://www.fc.up.pt/hippocrates>

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With the cooperation of
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All the information, including this text, can be found at <http://www.fc.up.pt/hippocrates>

For further queries use the e-mail hippocrates@fc.up.pt or
fax the Spring School **+351 220100809**

The participation in the School is subjected to a pre-selection.

UP TO MARCH 23, 2007

Prospective applicants should fill in the registration form available at <http://www.fc.up.pt/hippocrates> and send it to hippocrates@fc.up.pt

UP TO APRIL 10, 2007

Selected applicants should pay the fees once notified of acceptance to the School.

The participation fee is 150 euros and covers School attendance documentation, coffee breaks, lunches, and the School dinner.

Program

2-3 MAY 2007

FACULDADE DE CIÊNCIAS DA UNIVERSIDADE DO PORTO
PORTO PORTUGAL

NiSIS Welcome

NiSIS representative

Topics on Biomedical Systems Modelling

Fernando Lopes da Silva | University of Amsterdam - NETHERLANDS

Monitoring and Control of Anaesthesia: a "Fly by Wire" Approach

Dwayne Westenskow | University of Utah - USA

Stochastic Methods for Knowledge Extraction in Biomedical Systems

José Carlos Príncipe | University of Florida - USA

Mathematical Modelling of Tumor Growth Inhibition for the Development of Anticancer Drugs

Giuseppe de Nicolao | University of Pavia - ITALY

Nonparametric Identification of Pharmacokinetic Population Models via Gaussian Process

Giuseppe de Nicolao | University of Pavia - ITALY

Sedation: Monitoring, Model Validation and Control

Pedro Gambús | Clinic University Hospital, Barcelona - SPAIN

Diabetes: Closed Loop Glucose Control

Roman Hovorka | University of Cambridge - UK

Estimation of the Level of Consciousness by AEP, BIS and Entropy Signals

Erik Jensen | Danmeter, Denmark & Polytechnic University of Catalonia, Barcelona - SPAIN

Compartmental Models: System Analysis and Control Issues

Paula Rocha | University of Aveiro - PORTUGAL

Modelling of Human Physiology for Educational Simulation

Willem van Meurs | INEB, University of Porto - PORTUGAL

Common Engineering Sensors in Bio-Applications

Joaquim Mendes | University of Porto - PORTUGAL

Models for Physiological Systems

Teresa Mendonça | University of Porto - PORTUGAL

João M. Lemos | INESC-ID/IST - PORTUGAL

Control: From Basics to Advanced Algorithms

João M. Lemos | INESC-ID/IST - PORTUGAL

Automation and Control of Anaesthesia in Animals

Luís Antunes | University of UTAD, Vila Real - PORTUGAL

Control in Anaesthesia: Algorithms and Clinical Cases

Teresa Mendonça | University of Porto - PORTUGAL

Simão Esteves | Hospital Geral de Santo António, Porto - PORTUGAL

Fault Tolerance for Control of Physiological Variables

João M. Lemos | INESC-ID/IST - PORTUGAL

Monitoring and Control in Anaesthesia: an Implementation Example

Catarina Nunes | University of Porto - PORTUGAL

Modelling, Automation and Control of Physiological Variables: Open Problems and Prospects

Teresa Mendonça | University of Porto - PORTUGAL