Course Title: " Bioelectromagnetic systems for innovative High Performance Sensing and Interaction strategies "

2026, May 2-7

Directors of the Course:
Prof. Nunzio Cennamo – University of Campania Luigi Vanvitelli - Italy
Dr. Katia Grenier - LAAS-CNRS, Toulouse, France

DRAFT Program

May 2 - Day 1 – arrival and accommodation

May 3 - Day 2

8.30 - 8.45 - Welcome to Participants, Brief Overview of The School and practical details (School Directors)

8.45 – 9.00 -Introduction and Course opening
(Course Director/s)

9.00 – 9.15 - Introduction of participants and the topics they work on

9.15 – 10.00 - Introductory lesson – The multidisciplinary approach and best laboratory practices (M.R. Scarfì, CNR-IREA, Italy)

10.00 – 10.45 – *Coffee break and Poster hang up*

Photonic sensing – Transduction mechanisms & Molecular recognition elements

10.45 – 11.30 - Overview of optical fibers and planar waveguides (L. Zeni, University of Campania Luigi Vanvitelli, Italy)

11.30 - 12.15 - Biological & biomimetic interfaces for sensing (O. Soppera, Université de Haute-Alsace, France)

Photonic Biosensors/1

12.15 – 13.00 - Optical Sensing strategies for detection at a single molecule level (N. Cennamo, University of Campania Luigi Vanvitelli, Italy)

13.00 -15.00 – *Lunch*

15.00 – 15.45 - Planar waveguides-based devices (L. Zeni, University of Campania Luigi Vanvitelli, Italy)

15.45 – 16.15 - *Coffee break*

16.15 -17.00 - Photonic sensors for environmental and medical applications (O. Soppera, Université de Haute-Alsace, France)

17.00 -17.45 - Nanophotonics and photonic sensing in several application fields (S. Kumar, Koneru Lakshmaiah Education Found., India)

May 4 - Day 3

Photonic Biosensors/2

8.30 -9.15 - Devices based on linear and nonlinear optics for biosensing (N. Cennamo, University of Campania Luigi Vanvitelli, Italy)

9.15 – 10.00 - Spectroscopy for medical applications (P. Jorge, INESC-TEC, Portugal)

10.00 – 10.30 *Coffee Break*

10.30 – 11.15 Optical fiber biosensors (P. Jorge, INESC-TEC, Portugal)

11.15 – 12.00 - Hands-on experience

12.00 - 14.00 - Lunch

Terahertz sensing

14.00 – 14.45 - Terahertz radiation: generation and detection (G. P. Gallerano, formerly ENEA-Frascati, Italy)

14.45 – 15.30 - Terahertz imaging: an overview (I. Catapano, CNR-IREA, Italy)

15.30 – 16.00 *Coffee Break*

16.00 – 17.00 - Security gates (Speaker to be confirmed)

May 5 - Day 4

Systems for exposure and therapy

8.30 – 9.15 – Electroporation: from basic research to clinical applications (M-P. Rols, CNRS, France)

9.15 – 10.00 - Microwave laboratory devices (A. Paffi, Univ. of Rome La Sapienza, Italy)

10.00 – 10.30- *Coffee Break*

Microwave systems for sensing and interaction

10.30 – 11.15 - Microwaves for viruses' inactivation (A. Manna ELT Group, Italy)

11.15 – 12.00 - Microwave dielectric spectroscopy for biological analysis and EM fields interactions (K. Grenier, CNRS, France)

12.00 -12.45 - Microwave Imaging for Biomedical Applications: From Models to Inverse Problems (R. Solimene, University of Campania Luigi Vanvitelli, Italy)

Excursion with lunch box

May 6 - Day 5

Microwave exposure and radiation

8.30 – 9.15 – Miniature microwave exposure systems (K. Grenier, CNRS, France)

9.15 – 10.00 – Biological effects of microwaves (M-P. Rols, CNRS, France)

10.00 – 10.30 *Coffee Break*

Wearable and ingestible devices for sensing and energy transfer and harvesting

10.30 – 11.15 - Microwave wearable devices for energy transfer and harvesting (A. Costanzo, University of Bologna, Italy)

11.15 – 12.00 - Theoretical foundations and design strategies for wireless implantable devices (D. Nikolayev, University of Rennes, France)

12.00 – 12.45 - Microwave wearable devices (M. Spirito, Technical University, The Netherlands)

12.45 - 14.45 – *Lunch*

14.45 – 17.30 - *Poster Section*

20.00 - *Course Dinner and price for the best poster*

May 7 - Day 6

9.00 – 10.30 - On-going research and projects (all speakers)

10.30 – 11.00 *Coffee Break*

11.00 – 12.00 - Conclusions with questionnaire on quality of the course (all participants)

Lunch

Departure