

Summer School

Enabling Technologies for Industrial IoT 2025



UNIVERSITÀ
DI PISA



DIPARTIMENTO DI
INGEGNERIA
DELL'INFORMAZIONE



UNIVERSITÉ
**Grenoble
Alpes**



Summer School Enabling Technologies for Industrial IoT
6 ECTS (European Credit Transfer System)

17 July - 24 July 2025 Lessons- Theory (in presence* and remote)**
25 July - 30 August 2025 Lessons-Project work (remote)**

***All lessons in presence 17 - 24 July 2025 at**

**Dipartimento di Ingegneria della Informazione, Meeting Room Ground
Floor, Via G. Caruso 16, 56122, Pisa, Italia**

****Remote mode available via Microsoft TEAMS Virtual Room
(link sent to enrolled students)**

Scientific Coordination: Prof. Sergio Saponara
Administrative Coordination: Dr. ssa Sara Andrenucci

**Lecturers from
University of Pisa and University of Kiel**

All students will receive a certificate of attendance at the end of the course.

In addition, for all students that pass the exam, a 6 ECTS exam will be also registered and they will receive also a certificate of exam passed.

During the period 25/07/2025-30/08/2025 Prof. Sergio Saponara and Prof. E. Mingozi will assist the students via MS TEAMS for the project work part of the lessons.

The exam will consist in completing a technical report ("the project work"), starting from one of the subjects of the course and integrated with data and infos from student experience, assigned the 24/07/2025 in the afternoon.

If the technical report is completed and submitted within 30/08/2025 the 6 ECTS exam will be registered within 31/08/2025.

If the technical report is completed and submitted after 30/08/2025 but within 30/09/2025 the 6 ECTS exam will be registered within 1/10/2025

The technical report will be analyzed by a committee involving Prof. Sergio Saponara and Prof. E. Mingozi.

For info: sergio.saponara@unipi.it

18 - 24 July 2025 Lessons (in presence* and remote)**

L1, Thursday 17 July 2025, 8.00 – 19.00

8.00 – 10.00 Prof. S. Saponara

8.00 – 9.30 Student arrival and summer School Welcoming

9.30 – 10.00 Introduction and syllabus of the Summer School (course structure, subjects of the lessons, final exam, teaching material)

10.00 – 12.00 Prof. L. Klinkenbusch

Electromagnetic propagation issues for Industrial IoT

12.00 – 13.00 Prof. G. Manara

Advanced phased arrays for communications in industrial scenarios part I

13.00 – 14.00 Break

14.00 – 15.00 Prof. G. Manara

Advanced phased arrays for communications in industrial scenarios part II

15.00 – 19.00 Prof. S. Saponara

New trends in the internet of autonomous vehicles

L2, Friday 18 July 2025, 9.00 – 18.30

9.00 – 13.30 Prof. S. Saponara

Integrated circuits and architectures for Industrial IoT: communication aspects

13.30 – 14.30 Break

14.30 – 16.30 Prof. M. Macucci

Ultra-low power circuits and quantum computing paradigms

16.30 – 18.30 Prof. S. Saponara

Embedded High Performance Computing: the EuroHPC and the European Processor Initiative

Saturday 19 July 2025, 8.30-13.30

Social and cultural event (Prof. F. Poloni and Prof. S. Saponara, 8.30-13.30)

Guided tour of the new exhibition 'NOT JUST COMPUTING - working life and leisure time before the advent of the Internet'.

Cultural-Scientific event at Museo degli Strumenti per il Calcolo-

<https://www.msc.sma.unipi.it/> - Via Nicola Pisano 25, Area dei Vecchi Macelli - 56126 Pisa

L3, Monday 21 July 2025, 9.00 – 18.30

RFIDay: RF Identification and Beyond

09.00 – 11.30 Prof. A. Buffi

Introduction to the RFIDay and IEEE Council on RFID (CRFID)

RFID technology: objectives, basic principles, applications and challenges

11.30 – 13.30 Prof. G. Iannaccone

RFID circuit & system components

13.30 - 14.30 Break

14.30 – 16.30 Prof. S. Genovesi

Additive manufacturing for chipless sensors and antennas

16.30 – 18.30 Prof. P. Nepa

UHF-RFID technology for short-range localization: basic principles and applications

L4, Tuesday 22 July 2025, 9.00 – 18.30

9.00 - 13.00 Prof. S. Saponara

Integrated circuits and architectures for Industrial IoT applications: remote sensing aspects

13.00 – 14.30 Break

14.30 - 18.30 Prof. S. Giordano

Networking protocols and architectures for IIoT and Cyber Physical Systems

L5, Wednesday 23 July 2025, 9.00 – 18.30

9.00 – 11.00 Prof. A. Monorchio

Electromagnetic Information Security for IoT devices

11.00 – 13.00 Prof. C. Vallati

Integration of IoT devices into Cloud computing platforms: methods and practical examples

13.00 - 14.30 Break

14.30 – 16.30 Prof. G. Anastasi

The 6TiSCH Architecture for Industrial IoT Applications

16.30 – 18.30 Prof. F. Costa

Battery-Free Sensing Using RFID

L6, Thursday 24 July 2025, 9.00 – 19.00

9.00 – 13.00 Prof. E. Mingozzi

Web of Things: architectures, protocols and platforms for IoT applications

13.00 – 14.00 Break

14.00 – 19.00 Prof. S. Saponara

Final exercitations and projects assignments

25 July - 30 August 2025 Lessons-Project work (remote)**

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