

COURSE DETAIL

ELECTRONICS FOR PHYSICS OF THINGS

Country

Italy

Host Institution

University of Bologna

Program(s)

University of Bologna

UCEAP Course Level

Upper Division

UCEAP Subject Area(s)

Electrical Engineering

UCEAP Course Number

167

UCEAP Course Suffix**UCEAP Official Title**

ELECTRONICS FOR PHYSICS OF THINGS

UCEAP Transcript Title

ELECTR PHYSC THNGS

UCEAP Quarter Units

6.00

UCEAP Semester Units

4.00

Course Description

This course is part of the Laurea Magistrale degree program and is intended for advanced level students. Enrollment is by permission of the instructor. At the end of the course, the student has learned modern methods to design electronic circuits for analog and digital signals coming from experimental apparatus. Students also acquire knowledge of the technological processes that are the basis of digital integrated circuits. In particular, in the laboratory session students are able to design circuits with analog components and discrete programmable digital circuits (FPGA) and verify their operation. Also, the student will possess the knowledge to design relatively complex electronic circuits for high-speed data acquisition systems. The student will finally participate to specific laboratory sessions dedicated to FPGA implementations of digital architectures and signal transmissions via high-speed electro/optical lines. The course is divided into two modules. The first module is primarily geared towards analog electronics focused on high frequency amplifiers and circuits. The second module is focused primarily on frontier FPGA implementations. Digital high frequencies, synchronization, and reading processes are covered. Each student is shown some laboratory experiences. The laboratory session consists of a series of analog and circuits demos that are shown in the classroom. Particular emphasis is paid to the digital programming of commercial FPGAs (Xilinx families). Mini-Tesla coil is studied, simulated, and shown in a lab session.

Language(s) of Instruction

English

Host Institution Course Number

B2248

Host Institution Course Title

ELECTRONICS FOR PHYSICS OF THINGS

Host Institution Course Details

<https://www.unibo.it/en/study/course-units-transferable-skills-moocs/course-uni...>

Host Institution Campus

BOLOGNA

Host Institution Faculty**Host Institution Degree**

LM in PHYSICS

Host Institution Department

PHYSICS AND ASTRONOMY

Course Last Reviewed

2025-2026

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