



Internet of Things



Internet of Things

Internet of things is a real challenge for industries in all business sectors. To support companies in this field, an "Internet of Things" certification is provided by the Ecole Polytechnique Executive Education. This program targets engineers, wishing to add to their competencies an in-depth understanding of "The Internet of Things" (IoT), including limits and opportunities. It aims to understand constraints in order to establish safe and secure systems when designing connected objects, identify platforms, operating systems and existing frameworks in order to develop systems, understand IOT and cryptology security, know how to set up an integrated security system, be familiar with different IOT middlewares and Data Science challenges.



Target

Technical product managers, Software and hardware engineers, Developers and systems integrators, System engineers.

Prerequisites: Basic programming, background in science, technology, engineering and / or mathematics



Competencies

- › Integrate all the technical constraints (memory, processing capacity, battery life...) and their implications:
 - Understanding of predominant organizations, alliances and standard organizations, their importance and operation
 - Mastery of the constituent elements of connected object systems and their constraints of integration of exploitation, recycling...
 - Understand, present and arbitrate technological choices at different levels of the protocol stack : application data storage, recovery process, platform network architecture and topology management, physical interconnections
- › Integrate connected object systems into broader communication systems such as the Internet, taking into account architecture or scale constraints:
 - Mastery of architectures of modern networks
 - Specific mastery of architectural aspects to integrate networks of objects connected to the Internet - Design a complete system of connected objects, including terminals, platforms, protocols, communication paradigms, and exploitation
- › Design and implement devices that provide system functionality and security
- › Apply methods of validation of programs and protocols to ensure their reliability
- › Use analytical tools and methods to demonstrate the validity of a protocol or program



Executive Certificate

« Internet of Things, Concepteur d'un système d'objets connectés » (CNCP 1544)



Program

ADMISSION

PROTOCOLS, ARCHITECTURES, SYSTEMS, AND
FOG COMPUTING: BEHIND THE BUZZ-WORDS

CONSTRUCTING CONNECTABLE OBJECTS

STANDARDS AND STAKEHOLDERS - AND WHAT MAKES
FOR A SUCCESSFUL (IOT) COMMUNICATIONS
TECHNOLOGY:
FROM ALOHA TO IOT-PANS.

PAN TECHNOLOGIES: BLUETOOTH, IEEE 802.15.4...

HUB & SPOKE ARCHITECTURES

LPWAN TECHNOLOGIES: LORA, SIGFOX, DASH7...

IOT MIDDLEWARES AND FRAMEWORKS

EXTENDED RANGE: MULTI-HOP IOT
SYSTEMS, IOT ROUTING

IOT INNOVATION PROCESSES: C-K DESIGN THEORY...

IOT SECURITY & MODERN CRYPTOLOGY

INTRODUCTION TO MODEL CHECKING

INTRODUCTION TO EMBEDDED
SOFTWARE AND IOT SAFETY

ADVANCED IOT OPERATING SYSTEMS

DATA-SCIENCE FOR SENSOR NETWORKS

PROJECT REPORT & ORAL DEFENSE

CERTIFICATION



Head of studies

Thomas Clausen

- › Research Professor
- › Ecole polytechnique -
Department of computer science
- › thomasclausen.org



Diploma

« Internet of Things,
Concepteur d'un système
d'objets connectés »
(CNCP 1544)
Executive certificate



Application Process

Résumé and cover
letter in English



Duration

16 days - Classes
are held twice per week
(Friday + Saturday) for 8 weeks.



Language

Courses are in English
or in French, depending
on audience



Location

École Polytechnique Executive
Education, Campus Palaiseau

Intra-company opportunity



Contact

Karima Rimbou

karima.rimbou@polytechnique.edu
+33 (0) 1 69 59 66 63



exed.polytechnique.edu

