

## Embedded Systems and Internet of Things

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### Course summary:

This course seeks to introduce in a practical way the concepts of Embedded Systems, associated to applications for the Internet of Things (IoT). In particular, we will work on the development of customized distributions of the Linux OS for embedded systems, and in simple IoT applications using sensors and wireless networks. Likewise, we seek to disseminate the state of the art of 5G development to support IoT applications.

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### Program:

- 1 - Embedded systems development concepts in C/C++.
- 2 - Linux OS concepts for embedded systems.
- 3 - The Yocto Project, building custom images of the Linux OS.
- 4 - Lua for embedded systems and IoT.
- 5 - Wireless networks for IoT: practices with WiFi and LoRa.
- 6- 5G for IoT

### Bibliography:

1. The Yocto Project - Documentation - Online: <https://www.yoctoproject.org/docs/>
2. Programming in Lua, by Roberto Ierusalimsky. Publisher: Lua.Org (August 1, 2016). ISBN-10: 8590379868, ISBN-13: 978-8590379867.
3. Internet-of-Things (IoT) Systems: Architectures, Algorithms, Methodologies. Dimitrios Serpanos, Marilyn Wolf, Springer International Publishing AG 2018. Print ISBN 978-3-319-69714-7, Online ISBN 978-3-319-69715-4.
4. Internet of Things (IoT) in 5G Mobile Technologies, Constandinos X. Mavromoustakis, George Mastorakis, Jordi Mongay Battle (Editors). Springer International Publishing Switzerland 2016. Print ISBN 978-3-319-30911-8, Online ISBN 978-3-319-30913-2