

# **Introduction to FPGA Programming**

## **Report of Contributions**

Contribution ID: 1

Type: **not specified**

## **Lesson 1: Digital Systems, FPGAs and HDL**

*Monday, 26 August 2024 09:00 (45 minutes)*

**Presenter:** CIERI, Davide (Max-Planck-Institut für Physik)

Contribution ID: 2

Type: **not specified**

## **Lab 1: First Look at Vivado**

*Monday, 26 August 2024 09:45 (20 minutes)*

Contribution ID: 3

Type: **not specified**

## **Lab 2: Simulating an HDL design with Vivado and GHDL**

*Monday, 26 August 2024 10:05 (55 minutes)*

Contribution ID: 4

Type: **not specified**

## Lesson 2: VHDL Fundamentals

*Monday, 26 August 2024 11:30 (30 minutes)*

**Presenter:** CIERI, Davide (Max-Planck-Institut für Physik)

Contribution ID: 5

Type: **not specified**

## **Lab 3: Wiring Switches to LEDs**

*Monday, 26 August 2024 12:00 (30 minutes)*

Contribution ID: 6

Type: **not specified**

## **Lesson 3: Boolean Algebra, Look-up Tables and IOs**

*Tuesday, 27 August 2024 09:00 (30 minutes)*

**Presenter:** CIERI, Davide (Max-Planck-Institut für Physik)

Contribution ID: 7

Type: **not specified**

## **Lab 4: Wiring Switches to LED (part II)**

*Tuesday, 27 August 2024 09:30 (30 minutes)*



Contribution ID: 8

Type: **not specified**

## Lab 5: Implement a Full Adder

*Tuesday, 27 August 2024 10:00 (20 minutes)*

Contribution ID: 9

Type: **not specified**

## Lab 6: Hierarchical Design

*Tuesday, 27 August 2024 10:20 (40 minutes)*

Contribution ID: **10**

Type: **not specified**

## **Lesson 4: Sequential Logic and Flip-Flops**

*Tuesday, 27 August 2024 11:30 (30 minutes)*

Contribution ID: 11

Type: **not specified**

## Lab 7: Counters and Debouncing

*Tuesday, 27 August 2024 12:00 (30 minutes)*

Contribution ID: 12

Type: **not specified**

## Lab 8: An LED Blinker

*Tuesday, 27 August 2024 12:30 (30 minutes)*

Contribution ID: 13

Type: **not specified**

## Lesson 5: Types, Arrays and Arithmetic Functions

*Wednesday, 28 August 2024 09:00 (30 minutes)*

**Presenter:** CIERI, Davide (Max-Planck-Institut für Physik)

Contribution ID: 14

Type: **not specified**

## **Lab 9: Design an Arithmetic Logic Unit**

*Wednesday, 28 August 2024 09:30 (1 hour)*

Contribution ID: 15

Type: **not specified**

## Lesson 6: VHDL Simulation

*Wednesday, 28 August 2024 11:00 (40 minutes)*



Contribution ID: **16**

Type: **not specified**

## **Lab 10: Testbench Coding**

*Wednesday, 28 August 2024 11:40 (1 hour)*

Contribution ID: 17

Type: **not specified**

## Lesson 7: Storing Data on FPGAs

*Thursday, 29 August 2024 09:00 (30 minutes)*

Contribution ID: **18**

Type: **not specified**

## **Lab 11: Trigonometric Functions on FPGA**

*Thursday, 29 August 2024 09:30 (45 minutes)*

Contribution ID: 19

Type: **not specified**

## **Lesson 8: Packages, Libraries and Parametrisation**

*Thursday, 29 August 2024 10:35 (30 minutes)*

Contribution ID: 20

Type: **not specified**

## Lab 12: Packages and libraries

*Thursday, 29 August 2024 11:05 (30 minutes)*

Contribution ID: 21

Type: **not specified**

## **Lab 13: Parameters and Parametised Generation**

*Thursday, 29 August 2024 11:35 (30 minutes)*

Contribution ID: 22

Type: **not specified**

## Lesson 9: Finite State Machines

*Friday, 30 August 2024 09:00 (30 minutes)*

**Presenter:** CIERI, Davide (Max-Planck-Institut für Physik)

Contribution ID: 23

Type: **not specified**

## **Lab 14: Improve the Traffic Light**

*Friday, 30 August 2024 09:30 (30 minutes)*



Contribution ID: 24

Type: **not specified**

## Lesson 10: IP Blocks

*Thursday, 29 August 2024 12:05 (20 minutes)*

Contribution ID: 25

Type: **not specified**

## Lab 16: Using IPs

*Thursday, 29 August 2024 12:25 (20 minutes)*

Contribution ID: 26

Type: **not specified**

## **Lesson 11: Timing on FPGAs**

*Friday, 30 August 2024 10:00 (40 minutes)*

Contribution ID: 27

Type: **not specified**

## Lab 17: Timing Constraints

*Friday, 30 August 2024 11:00 (20 minutes)*

Contribution ID: 28

Type: **not specified**

## Lab 18: Generating Clocks

*Friday, 30 August 2024 11:20 (30 minutes)*

Contribution ID: 29

Type: **not specified**

## Lesson 13: External Interfaces

*Friday, 30 August 2024 11:50 (30 minutes)*

Contribution ID: **30**

Type: **not specified**

## **Lab 20: UART Transmitter**

*Friday, 30 August 2024 12:20 (40 minutes)*