

# ENGINE

Teaching online electronics, microcontrollers and programming in Higher Education

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**Output 2: Online Course for Microcontrollers:  
syllabus, open educational resources**

Open project leaflet: Module\_1-4 LCD 16x2

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# Funding Disclaimer

This project has been funded with support from the European Commission. This report reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.

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# Executive summary

This file contains open projects.

# Chapter 1: Open project 1

Draw a circuit and write the appropriate code so that the Arduino Uno works as a timer. Specifically, it will be able to count seconds, minutes, and hours - up to 24 hours. Start and stop will be done by a push-button. The time will be displayed on a LCD 16x2.

*Tip. Use millis() to measure time*

## Chapter 2: Open project 2

Draw a circuit and write the appropriate code so that the Arduino Uno works as a voltmeter with 2 channels that count from 0 to 5V. The channel indications will be displayed on a LCD 16x2. On the Arduino Uno add 3 push-buttons. Their functions shown in the next table.

Table 1. Push-buttons' actions

<b>Pressed and Released</b>	<b>Action</b>
Push-button_1	Display Channel_1 to LCD
Push-button_2	Display Channel_2 to LCD
Push-button_3	Sent the 2 voltages to Serial Communication

**Tip.** *Serial communication uses PIN\_0 and PIN\_1*

