

FABRICADEMY 2021-2022

Wearables week

Tutorial November 10th and 12th

Below you find the program of 'wearable II' week, contents and needed material. In the program you will find two paragraphs called 'Prep', it is about the preparation that should be done before the workshop by the participants. The 'Prep' consists of the realization of a circuit, and a speaker. I also give some hard-alternatives if the participants don't have the soft-material at home.

Prep for day 1 - offline

To follow the workshop the participants are asked to prepare, ahead of schedule, the driver circuit of power loads. The electronics components are: a N-channel MOSFET transistor, a diode, a resistor and the support material to build the circuit.

In the links below you find the instructions to build the circuit, like Liza will show during the global lecture, she uses a cardboard piece, copper tape and some soldered joints.

If you don't have these materials, you can still build the circuit on the breadboard, in attachment you find the breadboard view.

Links for driver circuit on cardboard:

- <https://class.textile-academy.org/2020/loes.bogers/assignments/week10/>, in 'Making a transistor circuit'
- <https://class.textile-academy.org/2020/beatriz.sandini/assignments/week10/>, in 'Transistor'
- <https://class.textile-academy.org/2019/jessica.stanley/assignments/week09/>, in 'Preparing to use actuators: Mosfet Circuit'

Prep for day 2 - offline

If you want to test the 'sound', you will need a speaker. You can make one, below you will find some useful pages that can help you to make a softspeaker. If you can't make one but you still want your hand noisy, you can use a standard/hobbyist 4 Ohm or 8 Ohm speaker.

Links for soft-speaker:

- <https://www.kobakant.at/DIY/?p=2936>
- <https://www.kobakant.at/DIY/?p=5509>
- <https://www.kobakant.at/DIY/?p=5935>
- <https://www.kobakant.at/DIY/?p=4465>

Workshop day 1 - online - Thursday, November 10th

We will go through the following points:

- how to drive an output device with Arduino, with particular attention to the code (we didn't have time to look at the code during 'wearable I' week).
- why you need a driver circuit to control a power load (a power output device).
- we will build an electromagnet flipping wing.
- we will control the flipping wing with Arduino and the circuit driver.
- we will see how to control the flipping wing with the digital sensor from 'wearable I week' and Arduino.

Material for day 1: see the google spreadsheet, page 10- Wearable KIT

Workshop day 2 - online - Friday, November 12th

We will focus on two main points:

- NeoPixel:
- we will work with Neopixel (cool lights!) and Arduino.
- we will control a sequence of Neopixel with the analog sensor of 'wearable I week'.
- Sound:
- we will see how to use the driver circuit to generate a melody (no audio tracks) on a speaker with Arduino.
- how to use a Class-D amplifier to play music from a player device (mp3 player, phone, computer...anything with the audio output port).
- we will use the mp3 player DFPlayer (https://wiki.dfrobot.com/DFPlayer_Mini_SKU_DFR0299#target_6) to play mp3 tracks storage on an SD-card.

Material for day 2: see the google spreadsheet, page 10- Wearable KIT

If you, students-instructors-labs, have questions about the material, alternatives and output devices that you would like to use during the workshop, you can contact me (Emma) at emma.pareschi@gmail.com, even before the workshop.
Looking forward.