

# Course of Professional Development Wearable Technology

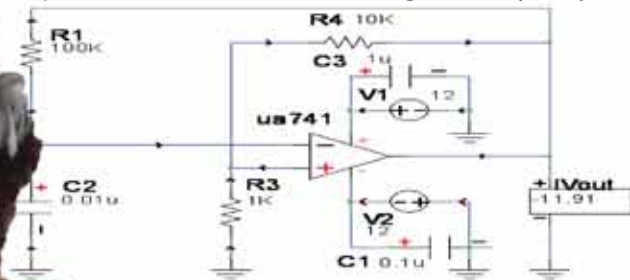


Wearable SmartTextiles: From Technology to Concept. A hands on analysis of electronics in innovative textiles and prototype development.

**University of Florence** 2010  
2011



Department of Architecture - Design, History, Project - Department of Electronics and Telecommunications



**Italiano**

**Base Level: 27-28 Nov 2010**  
**Advanced Level: 29 Nov 2010**

**English**

**Base Level: 13-14 Nov 2010**  
**Advanced Level: 15 Nov 2010**

What can electronic technology offer to the design field?

What are the most cutting edge uses of interactive applications?

The workshop *WearableSmart Textiles: Technology to Concept: a hands on analysis of electronic technology in innovative textiles and prototype development* seeks to address these questions. The course offers a theoretical and applied introduction to smart textiles; innovative fabrics currently being introduced in the different Interaction Design fields: from clothing to work dressing, to display and exhibits. Our objective is to explore in terms of design, themes that are based on technical knowledge but develop their potential in a visual and formal aesthetic.

## MODULE I

**Theory and exercises: 10 hours**

- Electronic components and their functions: LED, Capacitors, Resistors, Switches, Integrated Circuits, Batteries (each will be explained in terms of symbols, functions, connections, characteristics and containers).
- Exercises with a small circuit based on a 555 oscillator sewn on a textile perfbord.
- Sensors and textile actuators: fabric switches, stretch sensors, and temperature sensors. Practice with a LED circuit and textile switch.
- Embedded Systems and the "Arduino" microcontroller: description, functions, programming.

**Prototype Creation Workshop: 6 hours**

- Arduino Project: creation of a wearable project consisting of a warm winter garment.

## MODULE II

**Theory and exercises: 9 hours**

- Sensors and Actuators: Electroluminescent Fibers, Stroke Sensor, Electricity propagation in conductive fibers, high technology textile fibers, materials with shape memory, Piezoelectric sensors.
- Exercises with sensors/actuators and the "Arduino" microcontroller system; advanced course.

**Prototype Creation Workshop: 1 hour**

- Arduino Project: creation of a fashion accessory with wearable technology.

## DIDACTIC METHOD

The course offers two didactic modules depending on proficiency level:

- Module I: theoretical communications and exercises (10 hours) + practical workshop (6 hours)
- Module II: theoretical communications and exercises (9 hours) + final workshop (1 hour). The first course should be taken before the second course, but courses can be taken individually.

## ATTENDANCE

In order to receive the final attendance certificate, students need to be present at least 2/3 of the hours of each module taken (in case of attendance to both courses).

## COURSE ACCESS REQUIREMENTS

The course is open to all those in possession of an Associates degree or

Bachelor degree, high school diploma, professional or practical experiences in the field of smart textiles. It is possible to access the courses even in the absence of a degree.

## SELECTION

Participant selection is based upon the arrival of the application of the participants.

## NUMBER OF PARTICIPANTS

Module I: Min 12, Max 40 participants

Module II: Min 10, Max 40 participants

There are places reserved for Technical and Administrative staff of the University of Florence (Registration Fee waved by the University of Florence).

## FINAL CERTIFICATE

At the end of the course participants will be given an attendance certificate from the director and a 1 Credit CFU from the University of Florence for each module.

## REGISTRATION FEE

Module I: € 400

Module II: € 300

Module I + Module II: € 600.

Registration fee includes didactic materials and workshop kit. In the rare event that the minimum number of participants is not reached all fees will be refunded.

## REGISTRATION DEADLINE

**Applications and registration** can be found at [www.progarch.unifi.it](http://www.progarch.unifi.it) and submitted at the Department of Architecture - Design, History, Project; Via Gramsci 42, Florence, 50132, Italy, following directions found in the registration form.

The registration **deadline is by 09/30/2010**.

## For more information:

Prof. Paola Puma  
[paola.puma@unifi.it](mailto:paola.puma@unifi.it) +39 055-2055-417 / 363  
[www.progarch.unifi.it](http://www.progarch.unifi.it)

**This course is also available in Italian, please see [www.progarch.unifi.it](http://www.progarch.unifi.it) for more information**

