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Soft Academy Handbook

A resource for Students, Local Instructors, New (and old) Labs and Gurus alike

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New and aspiring sites: Basic requirements

Basic Requirements for Soft Academy Participation

Here are the basic requirements and expectations for any lab that wishes to participate in the the Soft Academy course.

Your lab MUST be equipped with the ALL necessary machines and other supplies to be able to participate in the Academy. Labs that are not properly equipped are not eligible to participate in the Academy, as the students will not be able to complete the course.

As this is a bleeding edge program, and inventory specification is continually being updated. For the most up-to-date list of recommended machines and supplies, see: the Soft Academy Lab Inventory

Necessary Equipment

Bold is mandatory

- **3D Printer / Laser cutter / Molding and casting/ cnc milling / materials / Composites / Electronics equipment**
- Basic biolab
- Sewing machine industrial normal
- Sewing machine industrial overlock
- **Sewing machine small digital**
- Knitting machine
- Knitting machine electroloom
- Fab Loom
- **Soft actuators - e-textiles (conductive threads, conductive fabrics, mini vibration motors…)**
- **Scissors- threads, yarns, natural fibers**
- **Big working tables (as fashion schools)**
- Roland Tex-art dye sublimation printer
- Embroidery machine

Necessary Supplies

- Textiles
- Molding and casting supplies
- Composites supplies
- Cardboard, sheet plywood and other consumable stock materials
- Electronics

Do I need these specific machines and components?

Yes - you do.

In order to fully participate in the class you will need the materials required.

In some rare cases, non-Soft Inventory machines may be substituted, but this often causes serious problems for the students as the Academy Gurus are unable to support the unfamiliar machines remotely when things go wrong.

We recommend the machines in the inventory for a reason, we have found them to be reliable, affordable and able to perform the necessary course tasks. Other machine will be considered on a case-by-case basis if your lab applies to be a Soft Academy site (Node) .

It also violates the core Fab principle that "Fab labs share core capabilities, so that people and projects can be shared across them." - Neil Gershenfeld, Fab Lab FAQ

Local Class Working Groups

What is the maximum / minimum number of students in a local Soft Academy class?

Beyond a Local Instructor, a workgroup of students is required in order to create the necessary collaboration environment for a successful Soft Academy class.

We believe (nearly) impossible for a student to complete the course on their own and workgroup ensures that one student’s strong suit may help make up for another student’s weak spots and vice versa.

Here are the general guidelines for Class Working Groups:

CRITICAL MASS NECESSARY: They are made up of a Local Instructor and at least 3 students or 3+ students and a Remote Guru.

PREVENTING INSTRUCTOR OVERLOAD: Groups larger than approximately 10 students per Local Instructor or Guru are not recommended, simply because there are not enough hours in the weekly cycle for each of those students to receive appropriate guidance from a single individual.

MACHINE LOGISTICS: In the case of multiple Local Instructors / Gurus in one lab, another 5 students can be enrolled for a recommended maximum of 15 students, as the problem now becomes a logistical one of students vs machines and machine time available (assuming standard inventory quantities).

REMOTE LOCATION CONSOLIDATION: Likewise, it is not recommended that Guru support more than 10 remote students and every attempt should be made to group remote students in such a way that Gurus do not have students in more than 2 remote locations.

Basic Soft academy course info

Soft Academy is a transdisciplinary course that focuses on the development of new technologies applied in the textile industry, fashion and upcoming wearable market.

The course lasts 6 months, with 3 months of seminars and modules and three months of applied project research.

The fashion industry is one of the most traditional and the 2nd most pollutant in the world after oil.

Today 20% of water pollution globally is caused by textile processing and consumers worldwide spent US$1.7 trillion on fashion in 2014. The production of the clothes we use is sustained over devastating social consequences in countries like Bangladesh and China, where labour exploitation holds the low prices we love to pay in H&M, Zara and the like.

Fashion industry needs to change... More than 50 years ago, science fiction authors such as Asimov “predicted” video conferencing systems, remote learning, artificial intelligence, and mostly all the advanced technologies we are deploying in our life today.

The ubiquity of knowledge and information is transforming culture and learning processes for people, changing completely the way we work, live and play. Hyper connectivity through digital platforms is becoming symbiotic with the physical realm, creating synergies between bits and atoms in places like Fab Labs and Makerspaces all over the planet. Digital fabrication laboratories are becoming incubators for innovative technologies and creators of spin off and disruptive initiatives that are being implemented in the “real” world.

In Barcelona we have continuously contributing to the change of mindset on how we understand the gaps of our broken economy, and how to open the exclusiveness of means of production and networks through practical examples like: Smart Citizen, Fab Textiles, Open Source Beehives, Fab Store as well as implementations in global scale, such as the Fab City project, Fab 10 Conference, or FabLabs.io.

The possibilities to conduct experimental research in a open laboratory gives the physical and mental space for innovative re-thinking, and offer the resources for visions to be materialised, tested, developed and make an active impact in people’s life, no as a linear process, but as a spiral iteration and implementation in the reality.

In Soft Academy we are developing and implementing a new approach on to how create, produce and distribute fashion elements, by using distributed manufacturing infrastructures and knowledge networks. We are experimenting with the human body and human culture, by recycling, hacking and sensing it, creating feedback loops with project development, where materials, aesthetics and customisation play equal and important roles. Soft academy offers a cross-disciplinary education and research platform, where production and culture through advanced technologies are making impact in the way we think and act towards the fashion industry.

We work locally, while creating connected communities globally.

We are not waiting for things to change, we are changing them from the ground up.

Bootcamp

Classes

Class 1

Digital Human. Digitizing the self

TASK: use software (make human, scanning, 3d modeling to obtain the body and a digital fabrication process to produce it (the production happens in groups of 3-4)

Class 2

Circular Fashion, open source , upcycling , zero waste clothes, reconfigurable fashion, hacking the fashion industry

TASK: design and document digital fabricated creation and upload to platform (fablabs.io or intergrated platform ^opensourcefashion^) for sharing. Modular reconfigurable systems / assembled garments / seamless fashion. Keep metrics of it while the duration of the course, use social media to share and track its spreading

Class 3

The Textile scaffold

TASK: use textiles for composites, polymerisation, UV solidification, concrete casting, crystallization, biocomposites

Class 4

Biofabrics

TASK: DIY materials (bacteria dying/ biocouture/ bioplastics/ natural dying/ fruit leather)

Class 5

E-textiles and wearables

TASK: Soft circuit making, flexible pcbs

Class 6

Open source hardware and new tools for the industry and subversive techniques

TASK: make machine, contribute to existing open hardaware for fashion, fab loom, hack brother machine, circular knittic

Class 7

Computational fashion

TASK: parametric modeling for 3D printing

Class 8

Implications and Applications

TASK: Health, prosthetics, wearables for space, sports, energy harvesting fabrics, haute couture,performative arts, embodied interaction

Class 9

E-textiles and wearables II

TASK: Inputs and Outputs

Class 10

Digital Craftsman

TASK: work with a craftsman, study his production cycle and implement technology into one of its steps, shoe making, accessories

Class 11

Next Human, on Singularity

TASK: Future scenarios and critical thinking on technology

Class 12

Final Presentations

TASK: Present the project you want to develop in the next 3months.

Roles and Key personnel

Soft Academy Staff and Contacts

Below are the contacts and roles of some of people which you may need to get in touch with throughout the course.

- Anastasia Pistofidou -info@fabtextiles.org
- Cecilia Raspanti
- Fiore Basile

Video Conferencing and Mailing lists

Video Conferencing

Necessary Hardware / Connectivity

- Internet access (recommended at least 1MB upload/download speed)
- Webcam (or one built into your computer)
- Noise canceling microphone (or headphones with a built-in mic for individuals)

A noise cancelling speakerphone is recommended when connecting through a computer as a group for class (as opposed to a Polycom system). We currently recommend this speakerphone, but see the Fab Lab Inventory for the latest recommendation.

Class Location (MCU / MCUC)

All classes and most meetings will take place on the CBA MCU.

- The address of the MCU is 18.85.8.48
- The address of the MCUC is 18.85.8.50
- Fab Academy Lectures are held in room 4 "Class" (4@18.85.8.48, 4@18.85.8.50).
- The PINs are distributed via the Instruct Mailing List.

Recommended Software

The CBA maintains a detailed list of compatible video conferencing clients and MCU technical connection details.

An up-to-date tutorial on connecting to the MCU using Linphone from an Ubuntu installation can be found here.

Since the previous recommended application for Mac and Windows is no longer supported (Jabber Video) we have created a quick tutorial meant only as a stop-gap measure until a better long term solution is found. Please find it here.

NOTE: You may want to connect to 1@18.85.8.48 to test your audio and video. "1" is the general Fab Lab channel and there are usually several labs connected that can help you test your audio and video.

Here’s what a MCU is and how it works:

"Simultaneous videoconferencing among three or more remote points is possible by means of a Multipoint Control Unit (MCU). This is a bridge that interconnects calls from several sources (in a similar way to the audio conference call)." - Wikipedia Entry

This means that you can talk directly to all the other participants, including Professor Neil Gershenfeld, and ask questions during our Wednesday lecture sessions.

Video Conferencing Etiquette - IMPORTANT!

Because everyone connected to the MCU can hear each other, it is vital that you mute your microphone when joining a conference and UN-MUTE ONLY WHEN SPEAKING. See video for how to do this.

Failure to mute will cause a disruptive feedback echo that will SERIOUSLY interfere with the audio quality, making class unpleasant.. Neil can see who is the source of the problem and will mute you, so failure to mute is potentially embarrassing. Practice connecting prior to class.

Since last year, we have set the default to mute as you join. This means that you will be required to unmute yourself not only on your local system (usually by clicking a microphone logo) but also on the MCU bridge before anyone can hear you. To do this, use the keypad in your Polycom remote or software application to ****input the number 6 followed by an asterisk *().**

Similarly, make sure that your camera is on and that all class participants are visible (if possible). Light the participants from the camera side and eliminate back lighting as much as possible, so everyone connected can see you.

Email Lists

As previously noted with regards to video conferencing, etiquette should also be observed in email conversations. Several email lists exist in order to make communication between the different groups within the Fab Academy structure easier and more organised.

class[year]@softacademy.org

This is an email alias shared by all current Fab Academy students. class14@fabacademy.org is for the 2014 class, class15@fabacademy.org for 2015, etc.

instruct@softacademy.org

This is an email alias shared by all current Fab Academy Instructors.

globaleval@softacademy.org

This is the email alias for the Global Evaluation Committee tasked with grading.

alumni@softacademy.org

This is an email alias onto which all graduates are entered upon completing Fab Academy.

Add Youself

If would like to be added to any of these lists please manage your subscription here. Remember that the instruct list is only for Instructors, Gurus and Staff so while you may add yourself to the list you will not be approved if you are not one of the above. Same applies to global eval etc.

Email List Etiquette

The following email lists are high-volume lists. Students should first discuss their issue with their Local Instructor or Remote Guru if possible.

Custom Email Lists

As an instructor or supernode Guru you may also choose to create your own alias in order to facilitate internal communication between your student’s (remote and local) and even yourself or your staff. i.e.: academy@fabLabbcn.org

Accepted sites: getting started

Basic Lab Expectations

- The "Basic Requirements" have already been met
- There is a Local Instructor present or a Remote Guru has been assigned
- If the Local Instructor is new (first year as an instructor), they are officially assigned to and being mentored by a Remote Guru.
- Local instructors will attend prep meetings each week half an hour before lecture

) (comprised of students and instructors) will attend lecture together from the local lab every Wednesday at 09:00 EST and recitations on Mondays 09:00 EST.

Class Participation: Internet Access

The Fab Academy meets as a class for lecture, homework review and other meetings via videoconference. You must have a reliable internet connection to participate.

- For connectivity requirements see the Video Conferencing section.
- For class meeting times see Basic Course Info section.

New Lab Checklist: Complete These Tasks Prior to 1st Class

- Your lab has all the tools set up and ready for immediate student use.
- You have ordered (or are working with the Fab Foundation to order) all the necessary course materials.
- Your lab meets the Video Conferencing requirements AND your lab has "test connected" to the MCU PRIOR TO CLASS to ensure that:
  - your network can handle the bandwidth required
  - you have the necessary hardware
  - understand how to mute your microphone
  - we have a pleasant and trouble-free first class ;-)
- **"How to Connect" to the MCU Quickstart
- Your lab's Local Instructor is on the instructor list. If you have not been receiving emails, you are not on the list. Contact Academany Coordination
- You have clearly communicated your student's email addresses to Academany Coordination so your students have been added to the "Class" email list.

New Remote Guru Checklist: Prior to 1st Class

Complete the tasks on the the "New Lab Checklist" above - PLUS You have arranged a mutually agreed upon WEEKLY MEETING TIME with your remote students to go over homework. problems, etc.

Grading and Final evaluation

Evaluation Schedule

Local Instructors should be evaluating student work periodically throughout the course. A bi-weekly review is good, a weekly review with the student is ideal.

Instructors must review each student’s work according to the documentation provided by the student, NOT what was observed in the lab. Instructors should discuss incomplete work / documentation with a student on an ongoing basis. There should be no surprises at the end of the course.

In order to complete the program students need to satisfactorily complete _all _assignments and their final project.

Please keep in mind that these diagrams were designed last year and as so, the dates on them may not be current in some cases, yet the flow and logic remains. We will update them as soon as possible but please ignore the actual dates.

Complete Evaluation Life Cycle

coming soon

Local Weekly Evaluation Cycle

coming soon

Local Final Evaluation Cycle

coming soon

Global Final Evaluation Cycle

coming soon

Global Evaluation Committee

Members of the global evaluation committee will each spend additional 10-20 hours making the final decision on graduation.

How to Contact the Committee for Re-Evaluation

I realize that there are a few of you (or your students) that were missed or slipped through the cracks during the last round.

Any instructor who has a student that needs to be re-evaluated from a previous year should:

1. Review the student’s work themselves first
2. If the student is complete, contact the global evaluation committee on the email address above.
3. Use the *email subject heading** "Re-Evaluation Requested: STUDENT NAME"**
4. Then the committee will review and determine final graduation status

Use of consistent subject headings will help us sort and filter our huge piles of email much more easily and **enable us to more quickly address your situation.** We truly want to get last year's limbo graduation decisions resolved.

Why Re-Evaluation Backlogs Happen

The Evaluation Committee members are **volunteering large amounts of their time** to review student work - after teaching the Academy all semester. Please keep this in mind.