PROFESSIONAL COURSE

DIGITAL TAILOR WITH A FOCUS ON PAREMETRIC PATTERN MAKING AND DIGITAL EMBROIDERY

ONL'FAIT

In October 2017, Onl'fait, a non profit organisation, opened the first Fab Lab in Geneva thanks to the G'innove programme, managed by the Agenda 21 service. Onl'fait is a space open to all around digital craftsmanship, which provides its community with technical, technological, and human resources. The aim is to offer a varied community of professionals and enthusiasts the tools to repair, develop, prototype or even create a product. Onl'fait is also an intergenerational and multicultural meeting place to reflect on an ecological, local and sustainable approach to technology and consumption. A Fab Lab is also a global sharing network where members are in turn beneficiaries and contributors, with experiences being pooled to optimise global innovation.

THE FAB LABS

The first vocation of Onl'fait is in the field of education and development. Fab Labs are seen as an innovation in technological education, to train skilled labour and enhance learning through practice in STEM (science, technology, engineering and mathematics) disciplines. In terms of economic development, Fab Labs are the perfect embodiment of technological innovation with a social purpose, enabling the application of local designs on an international scale without compromising their content. These two ingredients suggest that the integration of Fab Labs into local economies will create new jobs and income in a growing collaborative economy. In general, Fab Labs are gaining more and more interest as tools for revitalising the economy of a city or even a country.

TEXTILE AND DIGITAL

The vocational training courses that Onl'fait offers consists of textiles, carpentry, and the Internet of Things, and also includes training in the use of specific machines and techniques, participation in the life of Onl'fait, and the development of a personal project.

In the Fab Labs, many users work with textiles, leather or biomaterials to create digital wearable experiences, clothing or accessories. These projects are made with sewing and digital embroidery machines, but also with the laser cutter, vinyl cutter and 3D printer. In addition, electronics are often integrated to create smart clothing and new biomaterials are made and used to test more sustainable alternatives to traditional textiles. Open source software such as Valentina has been developed collectively to design parametric patterns. The transition from purely mechanical to digital machines is a source of immense possibilities and innovations. Society is now asking the fashion industry - the second most polluting in the world - to support its ethical and sustainable revolution without forgetting the commercial, aesthetic and practical vision. Onl'fait is the Swiss branch of the Fabricademy, a 6-month transdisciplinary course which is the intersection of textiles, technology and biology focusing on the development of new technologies in the textile field.
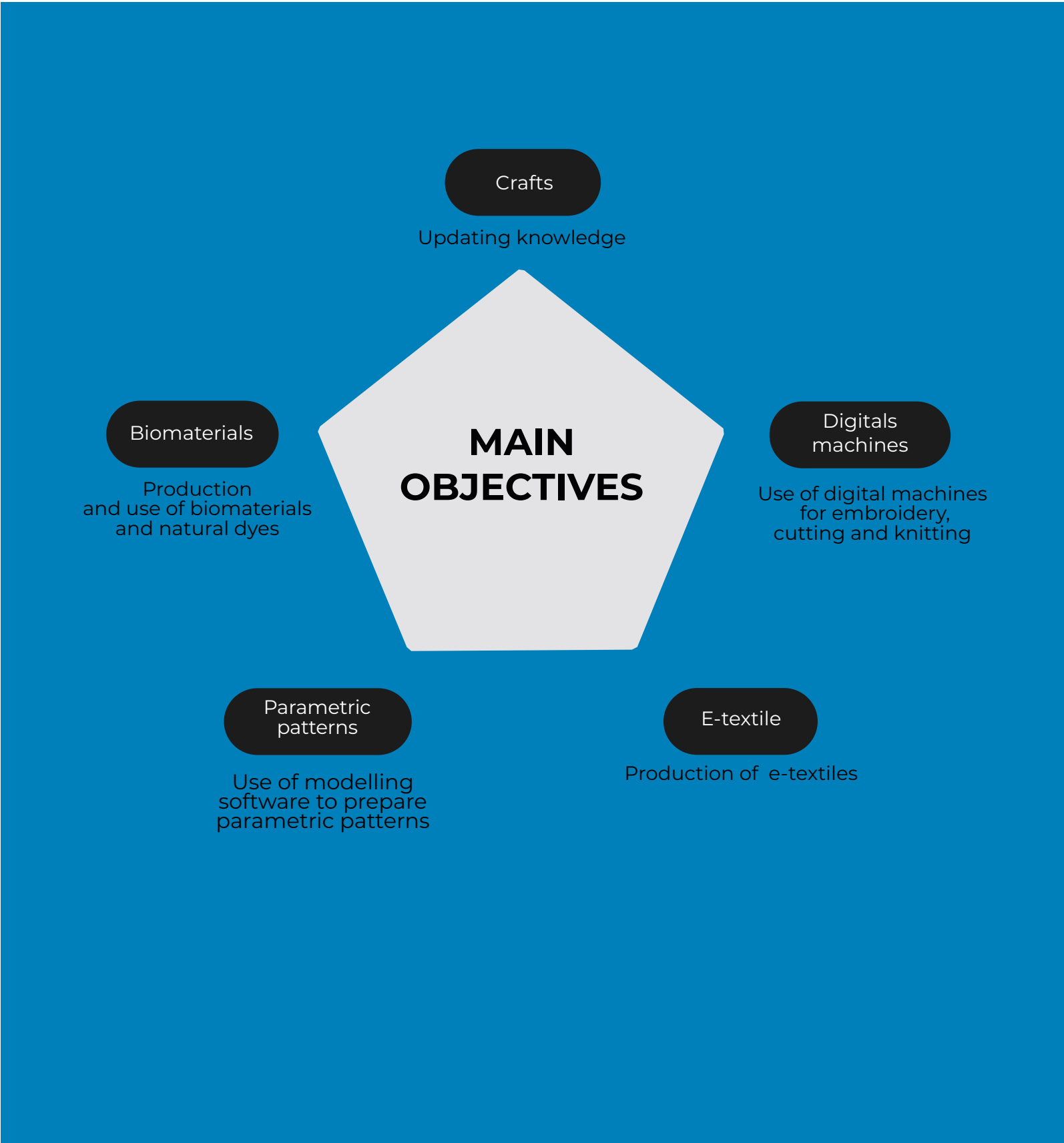
MAIN OBJECTIVES

The training course aims to upgrade the participants' knowledge of craft, transitioning to a more digital and sustainable approach.

Crafts
Updating knowledge

MAIN OBJECTIVES

Biomaterials
Production and use of biomaterials and natural dyes

Digitals machines
Use of digital machines for embroidery, cutting and knitting

Parametric patterns
Use of modelling software to prepare parametric patterns

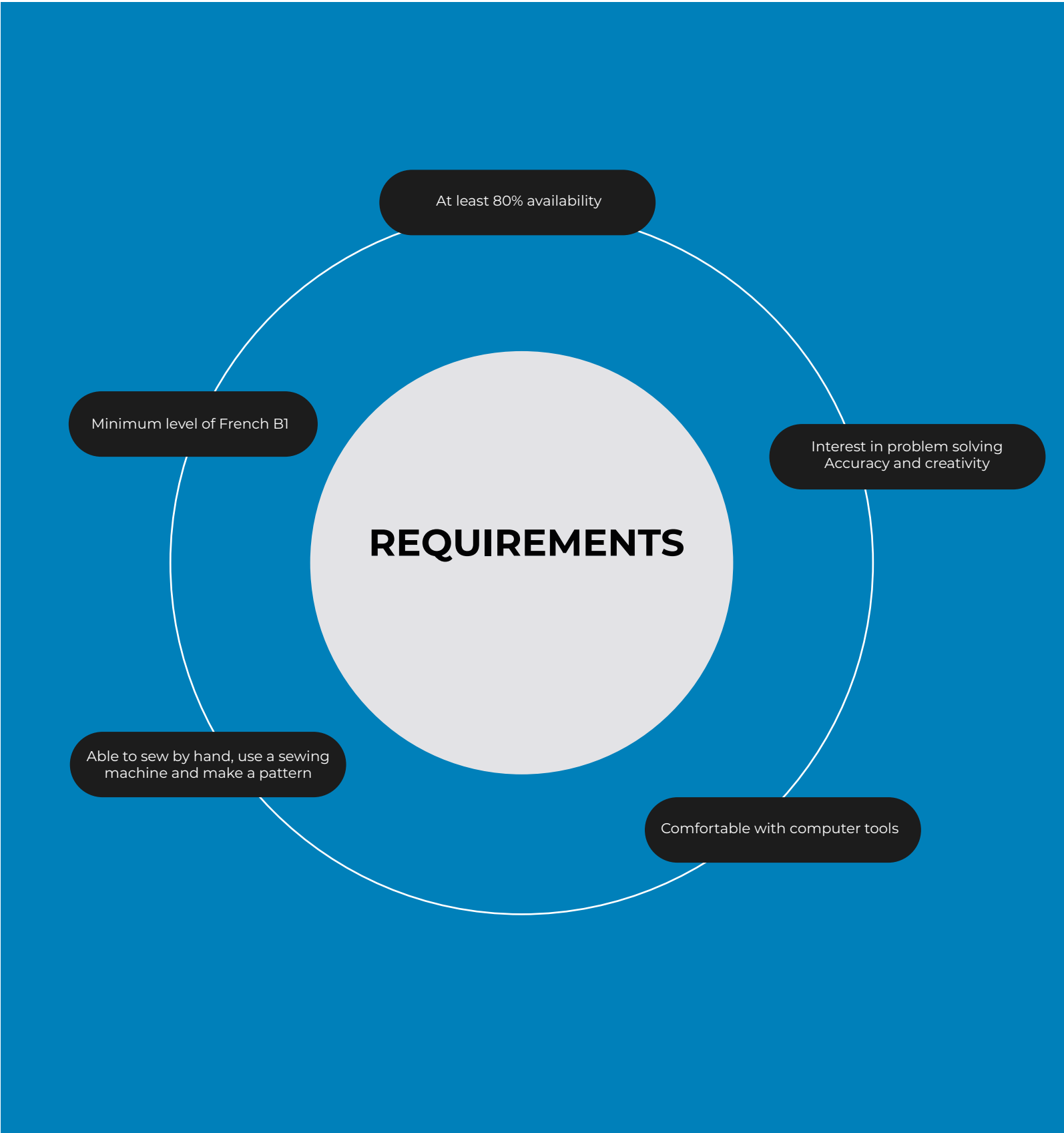**E-textile**
Production of e-textiles

TRADE SKILLS

- Program the digital embroidery machine, set up the machine; start production.
- Test the quality of the finished product.
- Draw, with the help of a computer and specific software, various sketches
- Design one or more garment models (prototypes), taking into account shape, volume, style, material combinations, colours, etc
- Use design software to develop parametric patterns, where you can simulate several variations using the computer
- Plan material resources and type of material for different machines.
- Use laser cutting to make textile designs.
- Integrate electronics into garments and textiles.
- Use and adapt the operation of the knitting machine.
- Mould leather and imitation leather.
- Recycle or dispose of waste and solvents according to environmental standards.

TARGET AUDIENCE

Qualified candidates in the field of sewing.

REQUIREMENTS

At least 80% availability

Minimum level of French B1

Interest in problem solving Accuracy and creativity

Able to sew by hand, use a sewing machine and make a pattern

Comfortable with computer tools

METHODOLOGY

Participants will divide their time between :

7.1.   Learning session
· Modelling software to prepare parametric patterns
· Digital embroidery
· Laser cutting textiles
· Production of e-textiles
· Production and use of biomaterials and natural dyes

7.2.   Working on Onl'fait commissions to «learn by doing"
Applying the acquired skills in concrete contexts and learning to work in a team, manage deadlines, make an estimate, respond to clients, etc.

7.3.   Development of a personal project chosen in agreement with the supervisory staff
Promote autonomy and work time management, to present the personal project at the end of the training course

7.4.   Other
Alternating theory and practice

· Personalised follow-up by professionals in the field
· Personalised training according to needs
· Distribution of working time (training/work/personal project development) varies from week to week
· Each week concludes with the updating of a Wiki journal (documentation of acquired skills, commissions to which the candidate has contributed, and progress of the personal project)
· Bimonthly and final assessments (job skills + soft skills)

TIMETABLE

The training course lasts between 4 and 6 months at 80%.

WEEK 1
TOPICS

· Presentation of Onl'fait, its objectives and operation, introduction to the team and safety rules
· Visiting the Fab Lab and presentation of the machines
· Introduction to the Wiki and Onl'fait documentation and communication tools
· Introduction to laser cutting textiles

OBJECTIVES

· To integrate into the life of Onl'fait, to respect schedules and safety instructions
· To have access to internal communication tools
· Create an Onl'fait wiki account and prepare the homepage
· Know how to use the laser cutter for textiles

EXTERNAL RESSOURCES

Fabricademy mode modulaire:
· http://fabricademy.fabcloud.io/shemakes/handbook/1.-learning-paths/discovery-path/Workshops/DigitalFabrication/4-modular-fashion/
· http://fabricademy.fabcloud.io/shemakes/handbook/1.-learning-paths/discovery-path/Workshops/DigitalFabrication/6-modular-fashion-2/
· https://class.textile-academy.org/classes/2020-21/week03/
Open circular hub plateforme:
· https://oscircularfashion.com
Inskape:
· https://inkscape.org/release/inkscape-1.2.1
Wiki laser Onl'fait:
· http://wiki.onlfait.ch/index.php?title=Cat%C3%A9gorie:D%C3%A9coupeuse_laser

TIME ALLOCATION WEEK 1

60% TRAINING	25% ASSIGNEMENTS	15% PERSONAL PROJECT

WEEK 2

TOPICS

- Introduction to Inkscape
- Modular fashion

OBJECTIVES

- Understand the basic tools of Inkscape
- Recreate a 2d shape in Inkscape
- Create your own pattern in Inkscape
- Make the design on paper as a test
- Cut a sample (A5- A4) in felt, leather or other textile material without sewing

TIME ALLOCATION WEEK 2

60% TRAINING	25% ASSIGNEMENTS	15% PERSONAL PROJECT

WEEK 3

TOPICS

- Modular fashion
- Inkscape
- Documentation

OBJECTIVES

- Develop the previous week's pattern or create another modular pattern
- To make an object, a bag or a garment out of felt, leather or other textile material without sewing and according to the principles of modular fashion
- Upload drawings and photos to the platform and document on the wiki

TIME ALLOCATION WEEK 3

60% TRAINING	25% ASSIGNEMENTS	15% PERSONAL PROJECT

WEEK 4

TOPICS

- Introduction to digital embroidery
- Research on the personal project

OBJECTIVES

- Prepare the machine
- Test internal machine designs, (single and multiple colors)
- Document and test different needles, and thread tension for different fabrics and embroidery designs

EXTERNAL RESSOURCES

Wiki Onl'fait: https://wiki.onlfait.ch/index.php?title=Accueil
Edu tech wiki: https://edutechwiki.unige.ch/fr/Guide_de_tutoriels_de_broderie_machine

WEEK 5

TOPICS

- Introduction to Valentina (free software for parametric pattern making)
- Research on the personal project

OBJECTIVES

- Installation of Valentina software
- Non-parametric patterning of a skirt

EXTERNAL RESSOURCES

Site Valentina: https://smart-pattern.com.ua/en/valentina/download
Drive avec exemples: https://drive.google.com/drive/folders/1igvhoSv6VrZYm4qaXui7TvBk-0KqZefyn?usp=sharing

TIME ALLOCATION WEEKS 4 AND 5

60% TRAINING	25% ASSIGNEMENTS	15% PERSONAL PROJECT

WEEK 6

TOPICS

- Digital embroidery,
- Introduction to Stitchera
- Choice of personal project and work plan

OBJECTIVES

- Prepare a design with the Stichera software using an image from the internet in 1 colour
- Test the design with the embroiderer
- Create a vectorised design with Inkscape
- Prepare a design with the Stichera software in 1 colour
- Test the design with the embroiderer

WEEK 7

TOPICS

- Valentina (free software for parametric pattern making)
- List of materials, budget and order for the personal project

OBJECTIVES

- Learn to use the parametric tables
- Measure yourself or use universal sizes and fill in the size table
- Make a pattern with parametric measurements

TIME ALLOCATION WEEKS 6 AND 7

40% TRAINING	30% ASSIGNEMENTS	30% PERSONAL PROJECT

WEEK 8

TOPICS

- Digital embroidery
- Stitchera
- Inkscape
- Prototype of the personnal project

OBJECTIVES

- Prepare a pattern with the Stichera software using an image from the internet in several colours/stitches
- Test the design with the embroiderer
- Create a vectorised design with Inkscape
- Prepare a design with the Stichera software in several colours and stitches
- Test the design

EXTERNAL RESSOURCES

- https://www.youtube.com/watch?v=WSWBhixdwhE&t=293s
- https://www.youtube.com/watch?v=C9JtF6WB3Hs&t=5s
- https://www.youtube.com/results?search_query=Designing+in+Stitch+Era

WEEK 9

TOPICS

- Valentina (free software for parametric pattern making)

OBJECTIVES

- Detail and layout of the file
- Prepare the pattern file for laser cutting
- Cut a pattern with a laser

TIME ALLOCATION WEEKS 8 AND 9

40% TRAINING	30% ASSIGNMENTS	30% PERSONAL PROJECT

WEEK 10

TOPICS

- Digital embroidery
- Stitchera

OBJECTIVES

- Recreate or create a shoe, clothing or cap design
- Create this object

TIME ALLOCATION WEEK 10

40% TRAINING	30% ASSIGNMENTS	30% PERSONAL PROJECT

WEEK 11

TOPICS

- Valentina (free software for parametric pattern making)

OBJECTIVES

- Create patterns for a garment or use existing patterns
- Cut patterns using a laser
- Make a garment based on the pattern created

WEEK 12

TOPICS

- Digital embroidery

OBJECTIVES

- To finish the previous week's piece
- Discover different sewing machine stitches or mix embroidery with other learned techniques

WEEK 13

TOPICS

- Valentina (free software for parametric pattern making)

OBJECTIVES

- Finish the previous week's garment, if not completed Meeting with trainers, to answer questions and get advice
- Document on the wiki

TIME ALLOCATION WEEKS 11,12, AND 13

30% TRAINING	40% ASSIGNMENTS	30% PERSONAL PROJECT

WEEK 14

TOPICS

- Introduction to biomaterials

(The «biomaterials» weeks can be replaced by training on: Digital knitting / E-textiles / Natural dyes with bacteria / Fungi and textiles)

OBJECTIVES

- Use the 3 binders: sodium alginate, Agar Agar, Gelatine:
- Produce samples with the Fabricademy recipe
- Produce a recipe from Materiom
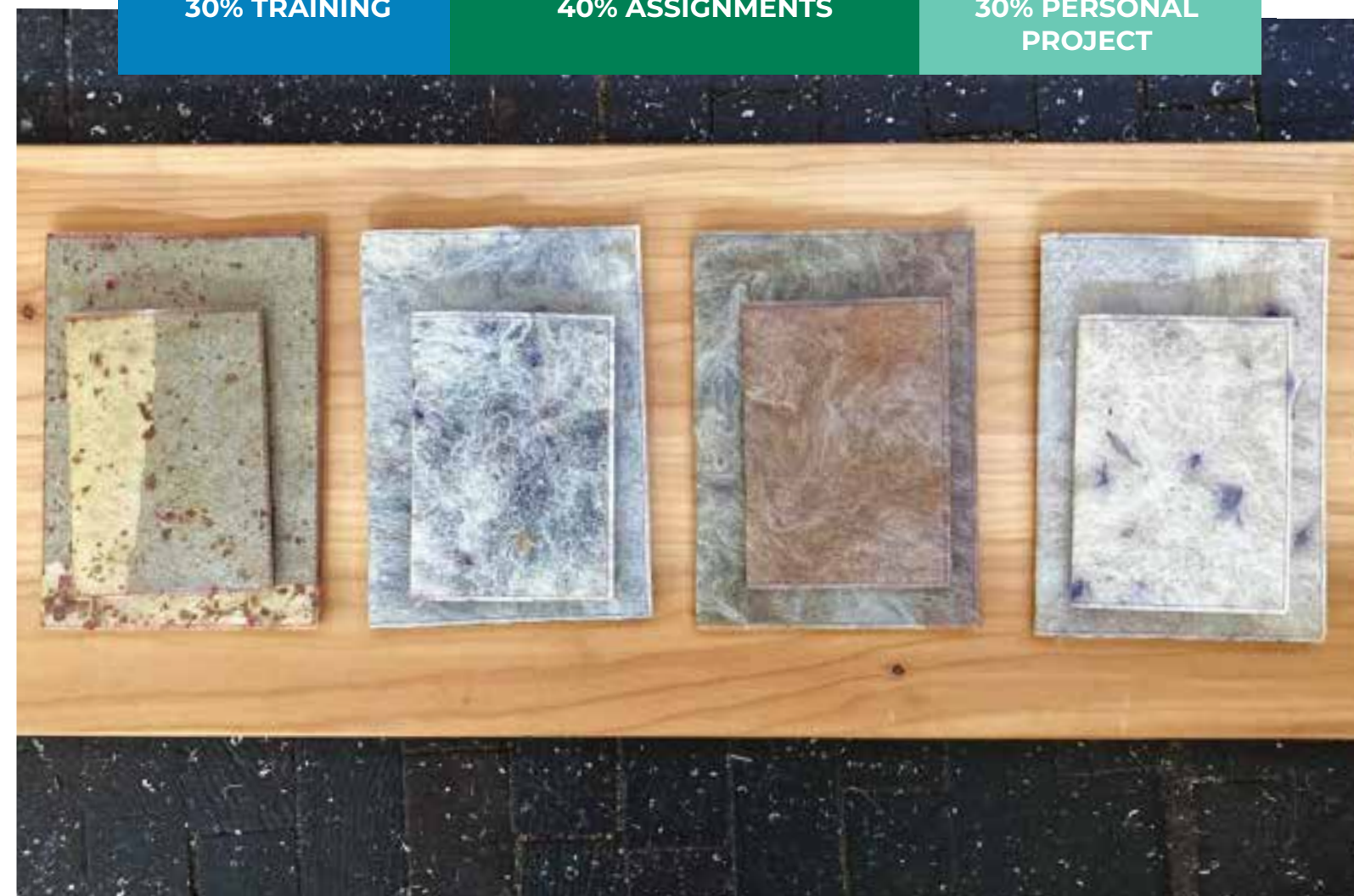- Produce biotextile with orange peels

EXTERNAL RESSOURCES

- https://materiom.org/
- https://class.textile-academy.org/classes/2019-20/week05A/
- https://www.youtube.com/watch?v=SB9D6yHGI7E

TIME ALLOCATION WEEK 14

30% TRAINING	40% ASSIGNMENTS	30% PERSONAL PROJECT

WEEK 15

TOPICS

- Biomaterials

OBJECTIVES

- Introduction of biotextiles using coffee grounds
- Making accessories using orange peel biotextiles
- Making accessories using coffee grounds biotextiles

WEEK 16

TOPICS

- Biomaterials

OBJECTIVES

- Test a new recipe of your choice
- Make a garment with biomaterials

TIME ALLOCATION WEEKS 15 AND 16

30% TRAINING	40% MANDAT	30% PERSONAL PROJECT