Scalability of multidisciplinary F-Tech solutions:

addressing future sustainability challenges

International Digital Course

2021

Syllabus

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/Part 1: Course Information

Course Description

The course focuses on the field of Fashion Tech and their value chains, aiming to advance students' knowledge on identifying future sustainable development challenges and how these can be solved by developing inter-disciplinary and scalable fashion-tech solutions (covering design, technology, management aspects). The course will discuss scalability from social innovation perspective in terms of scaling-out, scaling-deep and scaling-up dimensions. The course will discuss the link between management, design, innovation, technology and customer to enhance fashion tech industry competitive advantage across the triple bottom line: economic, environmental and social/cultural sustainability.
The 13-week long course focuses on the field of fashion tech and their value chains, aiming to advance students' knowledge on identifying future sustainable development challenges and how these can be solved by developing inter-disciplinary and scalable fashion-tech solutions (covering design, technology, management aspects). The course will discuss scalability from social innovation perspective in terms of scaling-out, scaling-deep and scaling-up dimensions.
Contents will be delivered through a preliminary theoretical part aimed to level the knowledge of the students as a prerequisite for the practical challenge-based part of the course.
Besides, students will also be introduced to innovative ways of teaching that are based on digital tools used both to deliver the course and to develop project-work and group collaboration between teammates.
In the challenge-based part students will work in the interdisciplinary and international groups to experience the process and the methodological approach of a project development activity that includes design, engineering, business management, research & development. Students will be selected from

- Hogskolan i Boras - Swedish School of Textiles (Sweden),
- Politecnico di Milano – School of Design (Italy),
- University of the Arts London – London College of Fashion (UK),
- TU/Delft - Industrial Design Engineering Faculty (The Netherlands)
- Ecole supérieure des Technologies industrielles avancées (France).

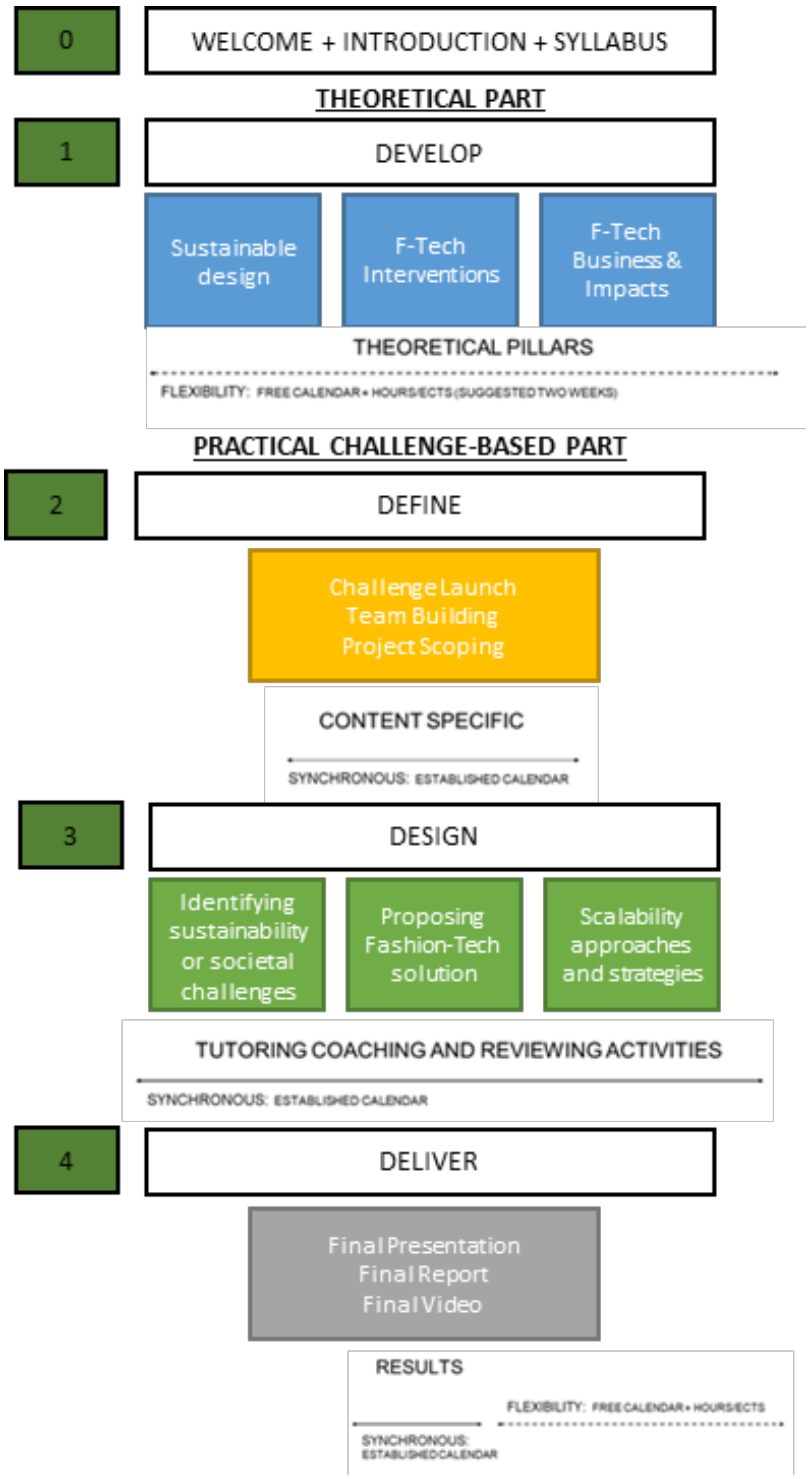
Supporting and collaborating companies

The course is partnered with two European companies leading the sector of Fashion-Tech: Centexbel (CTX) and We Love You (WLY).

Background

The global textile, apparel and fashion industry is transforming rapidly owing to the impact of the current COVID-19 outbreak with a massive contraction in global revenues. However this has simultaneously opened up new opportunities for driving a paradigm shift of the industry powered by digital technologies and virtual connections with the promise of enhancing innovation and sustainability along the entire fashion value chain; believed to be resulting in faster, more intelligent and more efficient processes, products, services, and business models. Further the digital shift in the industry promises not only to drive profitability but also significantly improve sustainability across all value chain stages. Digital technologies are found to have significant impact in driving dematerialization of resource-intensive processes in traditional supply chains. However, the application of digital technologies in the textile, apparel and fashion industry is in its exploratory phase; and existing technological advancements require widespread adoption and scale to attain. Even though digitalization is a 'silver lining' that offers opportunity to re-imagine the textile, apparel and fashion industry, create operational and financial stability, and underpin focus on sustainability and circularity, it is crucial to explore in-depth how to capture the value of being 'digital' in industry and what new fashion-tech business models and revenue streams can be created to truly attain scalable potential.

Course structure



Brief indicative contents

The digital course will be delivered with a preliminary **theoretical part** assigned in an **asynchronous way (Develop)** and a subsequent **synchronous challenge-based part (Define, Design and Deliver)**. The contents of the theoretical part will be delivered through lectures, preparatory exercises and applicative sessions to level the knowledge of students in the three different disciplinary domains of the project: sustainable design, f-tech interventions and f-tech business & impacts. The challenge part starts with a **kick-off through a brief launch and interactive brainstorming (Define)**. Students will then develop a comprehensive scalable Fashion-Tech solution to a critical sustainability/societal challenge, by creating a sustainable business model blueprint of a fictitious project company **(Design)**. The value proposition, and means to create, deliver and capture such sustainable solutions will be addressed from a systemic perspective, by developing (where necessary) mock-ups of product design, technical specifications engineering solutions and value chain. They will also work by selecting a main strand of the project among a series of thematic options, such as:

• Circular fashion-tech solutions for resource effectiveness and climate positive impacts
• Traceability solutions for improved provenance, circularity and due dilligence
• Smart textiles solutions for eco/sustainable materials.
• Innovative manufacturing and/or assembling processes for climate-smart solutions.
• 3D experience for simulation and personalization.

Finally in the **Deliver** module, students will produce the results of the project in different formats.

The contents of the course is further explained in detailed under “Part 3: Topic Outline/Schedule”.

Learning and teaching methods

Language

The language of instruction is English.

Virtual Learning environment

The course is delivered totally digitally through the following tools and Virtual Learning Environment (VLE) for the course content are:

- Pingpong
- Zoom
- Miro

These VLEs are together used to deliver the online sessions and for students to access the course content, view recorded sessions and upload assignments.
In Pingpong, students will access the Develop part of the course that is delivered in an asynchronous way: online recorded lessons, digital materials and resources such as documents, readings and multimedia presentations. This initial theoretical part will be participated asynchronously by students in an individual and self-paced modality. Students are required to follow the lectures and to carry out small quizes, assignments and exercises to assess their achievements and preparation on the specified topics. This preliminary preparation need to be achieved due to a deadline that will be common to all the participating students from the different HEIs. In this phase, students can also participate to different activities of interaction on the platform Pingpong. These will consist of sending messages aimed at communicating with course peers during this individual phase to exchange course materials, information, insights, results of the assignments and to start to know each other.

At a designated (common) time (See course schedule table 3.2), students will have a ice-breaker session including a project kick-off. Here the students will experience the start of the challenge-based group project. From then on, students will would work synchronically in multidisciplinary international groups with a practical assignment to be developed (problem-based learning). They will participate in group-paced activities using alternative Internet-based technologies which allow better remote collaboration. The VLEs required for working together remotely, for setting up a remote team culture, for managing the project and delivering the project passing through iterative phases of research, concept development, project development, business planning and blueprinting, etc. are Zoom together with Miro. On these two platform, students are working together and are supported by tutors for reviewing the project phases.

During the overall duration of the course, teachers will be academics and professionals from the Company. Tutors from each HEIs will be available for supporting the reviews to cover different topics and disciplines. The final exam will be delivered digitally and remotely by groups as a digital presentation, along with submission of a final project report.

Course Requirements

Students will use their given email id to login to the course from the login page (https://pingpong.hb.se/). They will be directly included in the course "AE1SM1 HT21-1 Scalability of fashion-tech value chains: Addressing future sustainable development challenges" (https://pingpong.hb.se/launchCourse.do?id=26303).
To access this course on Pingpong, students will need access to the Internet and a supported Web browser (Chrome, Internet Explorer, Firefox, Safari). In case technical assistance is needed at any time during the course or to report a problem with either the platform, the materials, students can send an inquiry to olga.chkanikova@hb.se or rudrajeet.pal@hb.se.

Apart from that local contact at each HEI is respectively:

1. POLIMI: Daria Casciani (daria.casciani@polimi.it)
2. TUD: Marie Chae (y.chae-1@tudelt.nl)
3. UAL: Jeanne Nielsen (j.r.nielsen@fashion.arts.ac.uk) and Tiff Radmore (t.radmore@fashion.arts.ac.uk)
4. ESTIA: To be confirmed

Course Timing

From 13th September 2021 to 30th November 2021.

Students should refer to the course calendar for specific meeting dates and times. Dates might be changed during the course. In case this happens, students will receive upfront updates on Pingpong course page.

Course Materials

For the Develop part (asynchronous theoretical part):

- An in-depth series of video lectures and multi-media presentations with high-quality graphics & detailed descriptions (13 video lectures)
- High-detail examinations of the topics produced through digital documents, readings)
- A comprehensive set of quizzes and assessment tests

Recommended Textbooks & Other Readings
The list of required course textbooks, texts and other readings are indicated at the end of every lecture in the videos, pdf files of the presentations and also as extra material. These are intended as optional materials to be read and studied to complete the learning objectives.

For the Define part and Design parts (Brief Launch and Challenge based part):

- 6 industry talks from experts from Centexbel and WLY
- A set of specific templates and connected reading materials related to the 3 phases of the challenge-based group project, that includes business plan, sustainable business model canvas, value mapping tools, and scaling models.

Student participation

The target of this course is to have an intake of 50 students in total.

The following number of students is selected from each academic partner collaborating in the course[1]:

- 11 students from Hogskolan i Boras - Swedish School of Textiles (HB)
- 1 students from Ecole supérieure des Technologies industrielles avancées (ESTIA).
- 9 students from Politecnico di Milano – School of Design (POLIMI)
- X students from University of the Arts London – London College of Fashion (UAL-LCF)
- 2 students from TU/Delft - Industrial Design Engineering Faculty (TUD)

Balancing the intake from different HEIs will be targeted in order to strive for a total of 50. The teamwork configuration in the Design phase is targeted at 10 groups of 5 people with an interdisciplinary scope, i.e. one from each HEI. Any deviation from the above planned participation will be addressed through situational mitigation measures.

[1] Number of students from UAL-LCF is to be inserted later as their student selection process is ongoing.

/Part 2: Course Objectives

The general purpose of the course is to train professionals who are able to employ the potentials of digital technologies in the domain of fashion, to drive development of Fashion-Tech solutions covering technology, management and design aspects, to address sustainable development or societal challenges.

The course focuses on the field of fashion tech and their value chains, aiming to advance students' knowledge on identifying future sustainable development challenges and how these can be solved by developing inter-disciplinary and scalable fashion-tech solutions (covering design, technology, management aspects). The course will discuss scalability from social innovation perspective in terms of scaling-out, scaling-deep and scaling-up dimensions.

To this end, the course, through an innovative way of teaching, will provide students with useful tools and skills to critically interpret the project dimension within the broader context of sustainable and societal developments contemplating diverse social, cultural, and technological contemporary shifts (new lifestyles and needs, new typological configurations and innovative technological scenarios).

In particular, digital theoretical lessons, preparatory exercises and applicative sessions will be delivered to transfer students' knowledge on how fashion and digital technologies are interconnected, and their potential as well as limitations towards addressing sustainability related challenges in the entire value chain.

From product/service ideation, design and engineering phases, to business model strategy development, students will be asked to explore and exploit the potential of Fashion Tech tools, as well as the implications of digitalization and virtualization of the value chain processes in relation to scaling opportunities for sustainability innovation.

The challenge-based phase is further designed to train the adaptive professionals able to collaborate to deliver a project in the field of fashion tech, as well as pitch their product and business ideas in the professional manner.

Learning Outcomes

Upon successful completion of the course students will be able to:

Knowledge and understanding

1. Describe and explain scaling and scalability in fashion-tech value chains;
2. Understand the role of fashion-tech solutions (covering design, technology, management aspects) in the context of future sustainable development risks and challenges;
3. Identify the implications of developing inter-disciplinary and scalable fashion-tech solutions in addressing societal trends and sustainability demands.

Skills and abilities

4. Apply innovative research and methodological approaches in the multidisciplinary Fashion Tech context;
5. Develop insights into fashion-tech tools and how to scale them in order to solve specific sustainable development challenges related to circularity, personal safety and health, climate change, social cohesion, etc.;
6. Develop innovative business model scalability approaches to accommodate the fashion-tech solutions related to products, processes and value chain;
7. Engage in dialogue and co-produce knowledge and innovation with various stakeholders across multiple disciplinary international contexts.

Evaluation ability and approach

8. Critically reflect from the SDG perspective on the economic, environmental, and societal impacts of implementing scalable fashion-tech solutions;
9. Critically reflect on complexities associated with scaling fashion-tech value chains, and demonstrate awareness of the negative impacts of it.

/Part 3: Topic Outline/Schedule

Overall the course includes both theoretical and practical activities that stretches over 13 weeks / 50 hours of frontal teaching/tutoring (synchronous and asynchronous) and about 80 hours of student work, i.e. asynchronous self-learning and interaction. The activities includes lectures, instructions, assessments, peer interactions and the delivery of a final project.

The course is broadly divided into 5 modules:

- **0/1 WELCOME (Weeks 36-37)**
- **1/3 DEVELOP (Weeks 37-39)**
- **4 DEFINE (Week 40)**
- **5/10 DESIGN (Weeks 41-46)**
- **11/12 DELIVER (Weeks 47-48)**

0/1 WELCOME

The course will be introduced in a synchronous one hour introductory session to welcome all the participating students and acquaint them with the course syllabus in all its aspects.

1/3 DEVELOP

The preliminary theoretical part will help students develop their theoretical and conceptual understanding of the different subject areas essential for this course. This is divided into 3 theoretical pillars of contents with an established number of hours for each. These pillars are:

I. "SUSTAINABLE DESIGN" from design/methodology perspectives
II. "F-TECH INTERVENTIONS" from technology/engineering/methodology perspectives
III. "F-TECH BUSINESS AND IMPACTS" from business/management perspectives.

This part of the course will be of 15 hours of asynchronous teaching. Given the fact that these theoretical pillars can be participated asynchronously (possibility to read materials, watch recorded lecture videos), the modules are delivered between weeks 37 and 39 (i.e. between the 1st and 3rd weeks of the course) with flexible deadlines. There is a quiz/test/assignment after each lecture that students have to complete also to test their knowledge. These quizzes or tests will be available on Pingpong platform, with relevant information/instructions on how to avail them easily. These exercises will be preparatory to the challenge based part so they are a very important part of the course and also fun.

Table 3.1. The lectures in theoretical pillars

PILLAR TITLE AREA INSTITUTION	**"SUSTAINABLE DESIGN" DESIGN/METHODOLOGY POLIMI**		
TITLE COVERED	**Short Description (table of content)**	**Lecture duration (minutes)**	**Main Takeaways**
1. FASHION DESIGN for SUSTAINABILITY: THE FOUR PILLARS Prof. Erminia D'Itria (POLIMI)	*The principles and practices of sustainability are today at the center of the global debate on issues related to development models in industries with high cultural content such as fashion. The finite nature of the non-renewable resources provided by the Earth pushes, in fact, to rethink these models in order to address the current crisis and to direct towards a sustainable system capable of embracing with a holistic approach the four pillars of sustainability: the environment, the economy, society and culture. Therefore, the objective of this lecture is the introduction to and exploration of these fundamental components of sustainability: the four pillars.*	*30 minutes*	> sustainability definition > understanding the four pillars of sustainability
2. TOWARDS A SUSTAINABLE PRODUCTION MODEL FOR THE FASHION INDUSTRY Prof. Erminia D'Itria (POLIMI)	*Today, the fashion system is based on an obsolete model that perpetuates unsustainable practices resulting in scarcity and pollution that affect the entire ecosystem, both planet and people. In this context, the proposed lecture will explore the impact of the Fashion industry, in the broad sense of fashion and textile sectors. The lecture will illustrate the increasing use of resources, as well as the resulting environmental and social impacts. Furthermore, within this lesson there will be a focus on the current business models (linear vs. circular) as a fundamental resource for the sustainable transition of the fashion system towards a responsible system.*	*30 minutes*	> understanding fashion environmental & social impacts > understanding the current productive fashion models
3. SUSTAINABLE FASHION: MATERIALS AS A POSITIVE VECTOR Prof. Erminia D'Itria (POLIMI)	*Today, the environmental and social crises have led industries to reconsider all production systems with a more conscious, accountable, and transparent oriented approach (Ellen Macarthur Foundation, 2017). Talking about sustainability today means referring to a system that is able to recognize and cultivate diversity, acting according to a holistic vision that allows us to live in the present without compromising the future. In this context, the following lecture will focus on the topic of innovative sustainable materials which are a fundamental resource for enabling sustainable design, as well as emerging new business models.*	*30 minutes*	> the role of materials in enabling a sustainable transformation for the fashion sector
4. WASTE MATERIALS > MATERIALS FROM WASTE Prof. Erminia D'Itria (POLIMI)	*The growing awareness about the different issues related to the impact of fashion processes and practices, as presented in the previous lectures, has led to an acceleration in the development of sustainable alternatives in the material field. In particular, this lecture will address how materials are vectors of sustainable solutions for the fashion system with a focus on the relationship between materials and waste.*	*30 minutes*	> exploring the material dimension and the potential role of waste
PILLAR TITLE AREA INSTITUTION	**"F-TECH INTERVENTIONS" TECHNOLOGY/ENGINEERING/METHODOLOGY ESTIA, HB, TUD, POLIMI**		
TITLE COVERED	**Short Description (table of content)**	**Lecture duration (minutes)**	**Main Takeaways**

5. TEXTILE INDUSTRY AND SUPPLY CHAIN MANAGEMENT IN CONTEXT OF INDUSTRY 4.0 - Dr. Vijay Kumar (HB)	*Overview of Textile Industry 4.0 and framework and contributing technologies* *Supply chain 4.0, and technologies vs. KPIs, and key challenges*	*45-60 minutes*	> Industry 4.0 in textile and apparel industry context > Supply chain 4.0, KPIs and challenges > Textile supply chain 4.0 cases
6. TRACEABILITY ALONG GARMENT PRODUCTION SUPPLY CHAIN - Demarcq Bixente (ESTIA)	*Allow students to master the different stages in the garment production supply chain. The students will learn the specificities of the different technologies that allows traceability in this supply chain.*	*20-30 minutes*	> Knowing the different stages in the garment production supply chain > Knowing the challenges of traceability and the return of data to the consumer > Traceability technologies
7. SUSTAINABILITY IN SMART TEXTILES - Dr. Youngjin Chae (TUD)	*Sustainability in innovative materials and products are challenging as the risks of novel technologies need to be quantitatively assessed. Sustainability in Smart Textiles are considered even more controversial as the analysis can be constrained be the characteristics and lifecycle of the product as well as their dual nature : textile and electronics. In this lecture, sustainability of smart textiles will be addressed through introducing interdisciplinary approaches between science, technology, design, and human sciences.*	*30 minutes*	Not provided yet
8. FASHIONTECH TODAY - Livia Tenuta, Susanna Testa (POLIMI)	*Overview of the state of the art of the mapped definitions, sectors and topics of the fashion-tech. Best practice examples mapped and interconnected to with main topics of future-forward fashion-tech applications. 1) How is the Fashion-Tech sector evolving? 2) How can we define currently the Fashion-Tech sector? 3) How can we map the Fashion-Tech sector today?*	*40 minutes*	> The Impact of Digital Revolution on the Fashion System > Advanced Tools to Design and Produce > Augmented and Interactive Body Equipment > Mixed Realities
9. 4.0 TECHNOLOGIES AT THE SERVICE OF CIRCULARITY - Marquoin Alex (ESTIA)	*Back to Industry 4.0 and its technologies* *Presentation of circularity in the industry and its objectives in the textile industry (reduce time to market, increase traceability and transparency, reduce environmental impact)* *Presentation of 4.0*	*30 minutes*	> Knowing the basics of industry 4.0, sustainability and circularity
PILLAR TITLE AREA INSTITUTION	**"F-TECH BUSINESS AND IMPACTS" BUSINESS/MANAGEMENT HB**		
TITLE COVERED	**Short Description (table of content)**	**Lecture duration (minutes)**	**Main Takeaways**
10. SDG OPERATIONALIZATION FOR DIGITAL FASHION VALUE	*Overview of how to approach the Sustainable Development Goals and use them to develop digital fashion value chains*	*60 minutes*	> Conceptual framework > Sustainable Development

CHAINS - Dr. Jonas Larsson (HB)			Goals > Textile & Fashion 2030 Progression Model > Examples of applied project in relation to circular economy and Fashiontech
11. PERSPECTIVES ON DIGITAL VALUE CHAIN AND BUSINESS MODEL DEVELOPMENT/EXPERIMENTATION - Prof. Rudrajeet Pal (HB)	*Concept of Business Model* *Explaining Digital Business Model* *Digital Fashion Business Models and Value Chains*	*60 minutes*	> business model concept > digital business model types > digital business model cases
12. BUSINESS MODEL SCALABILITY: ON SCALABILITY OF IMPACTS AND ASSOCIATED BUSINESS STRATEGIES - Prof. Rudrajeet Pal (HB)	*Concept of scale and scalability in business model context* *Scaling from social innovation perspective* *Examples from projects and practice in relation to business model scaling*	*45 minutes*	> What is scale and scalability in business model context > Scaling from social innovation perspective > Examples from projects and practice in relation to business model scaling
13. ON THE ROLE OF POLICY-MAKING AND DIGITAL INSTITUTIONS TO SUPPORT DIGITAL TRANSFORMATION - Dr. Olga Chkanikova - (HB)	*Concept of digital institutions* *Multi-level institutional perspective: need of aligning macro-, meso- and micro-levels practices/policies to support digital transformation* *Examples of digital institutions in relation to digital transformation*	*45 minutes*	>digital institution concept > institutional perspective and its influence on digital transformation > examples of digital institutions

4 DEFINE

The fourth week is focussed on increasing student-teacher and student-student interaction which is beneficial to kick-start the challenge-based group works. For this it includes synchronous sessions on team building exercises to attend the webinar with industry experts from HEIs and the company partners, followed by a group tutoring session. There is also an asynchronous student-led activity where students design their project work. The aim is to design a fictitious project company's vision, mission and core values, and initial business plan. Overall, this part of the course will be of 8.5 hours.

5/10 DESIGN

The next part of the course is practice and challenge-based and will be divided in three chronological phases, of two weeks each. Overall, in the challenge-based part of the course, the inter-HEI student groups will work **to develop a comprehensive scalable Fashion-Tech solution to a critical sustainability/societal challenge, by creating a sustainable business model blueprint of a fictitious project company.** The value proposition, and **means to create, deliver and capture such sustainable solutions will be addressed from a systemic perspective, by developing (where necessary) mock-ups of product design, technical specifications engineering solutions and value chain.** They will also work by selecting a main strand of the project among a series of thematic options, such as:

- Circular fashion-tech solutions for resource effectiveness and climate positive impacts
- Traceability solutions for improved provenance, circularity and due dilligence
- Smart textiles solutions for eco/sustainable materials.
- Innovative manufacturing and/or assembling processes for climate-smart solutions.
- 3D experience for simulation and personalization.

The three phases are as follows:

Weeks 5-6: Identifying sustainability or societal challenges.

Background: Climate impact of textile production, consumption and use present huge challenges, causing climate change and resource depletion. Such environmental challenges stemming out from textile, apparel and fashion industries is topped by social challenges facing the textile industry, and the potential for interventions linked to achieving social sustainability targets. The social hotspots of these industries have been found to relate to significant social risks such as low wage levels, child labour and exposure to carcinogens in the workplace.

In this context, student groups should:

- Identify a critical societal/sustainability challenge that your company pivots on, and
- Prepare initial elevator pitch on how your company is guided by the SDGs and what challenges it critically targets to solve through its business.

In this phase, there are three synchronous sessions; first dedicated to industry talks on “Sustainability/Societal challenge-driven Innovation in Fashiontech arena”, the second is organized as a group-wise preliminary concept pitching, and the final one is a feedback and interaction session on the work-in-progress status of the group projects.

Weeks 7-8: Proposing Fashion-Tech solution.

Background: The digital shift in the textile, apparel and fashion industries promises not only to drive profitability but also significantly improve sustainability across all value chain stages. Digital technologies are found to have significant impact in driving dematerialization of resource-intensive processes in traditional value chains. For instance, clothing companies that have started using digital technologies such as 3D design, virtual sampling and prototyping can optimize material consumption for physical sampling which can ultimately reduce carbon footprints. In the production stage, digitally-enabled on-demand production allows elimination of unsold clothes, and when combined with digital tools such as 3D virtual fitting can be used to manufacture made-to-measure garments, thus eliminating both pre- and post- consumer wastes. Other technologies, for example adding digital tags or RFID in garment-making stage can reduce the level of safety stocks needed, enable supply chain traceability, thus increasing the lifecycle of clothing by reducing pre-consumer waste.

In this context, student groups should:

- Locate the fashiontech solution rendered by the project company,
- Map the value profile (proposition, means to create, deliver and capture these) for the project company,
- Make sustainable business model blueprint with detailing technology, design, process and value chain dimensions.

In this phase, there are two synchronous sessions; first dedicated to industry talks on "Fashiontech solution space amidst sustainability/societal challenges", while the second is a feedback and interaction session on the work-in-progress status of the group projects.

Weeks 9-10: Scalability approaches and strategies.

Background: Scalability is an important factor in the transition to a more sustainable textile, apparel and fashion industry. Scalability from a business perspective is closely related to organisational growth and strategies of market penetration, product development, market development, and diversification, without which solutions remain experimental or as pilots.

In this context, student groups should:

- Locate the current scalability challenges and scaling opportunities in the solution provided by their project company,
- Identify approaches/strategies for scaling impacts based on systemic innovation perspective, and
- Reflect on scaling outcomes on SDGs.

In this phase, there are two synchronous sessions; first dedicated to industry talks on "Fashiontech scalability and its impact", while the second one is a feedback and interaction session on the work-in-progress status of the group projects.

Based on the specific disciplinary background, each component of the interdisciplinary groups will take care of the following activities and tasks in order to complete the project and the final assignment:

- Concept Pitching, and presenting project company's vision, mission and core values, and initial business plan
- Societal/sustainability challenge-driven innovation
- Sustainable Development Goal alignment
- Sustainable business modelling and value mapping with detailing on technology, design, process and value chain dimensions.
- Approaches/strategies for scaling impacts and systemic innovation.

Teamwork are going to be tutored and supported by a team composed of teaching staff and tutors from each HEIs to review the work of the students from different disciplines and perspectives.

11/12 DELIVER

Assignments and Deliverables of the Develop part (theoretical)

Students will be given the quiz links pertaining to each lecture on Pingpong platform. Please follow the instructions as provided in the Introduction dated 13th September to understand what quiz-related requirements are expected for completion of the theoretical part for students' from respective HEI.

Assignments and Deliverables of the Define and Design parts (challenge)

Student groups should upload on Pingpong interim assignments for every review session in the DEFINE and DESIGN phases. Deliverables relate to:

- Define: Project company's vision, mission and core values
- Define: Initial business plan/business model
- Design 1: Elevator pitch on Challenge-driven innovation, value chain mapping in connection to SDGs
- Design 2: Sustainable Business Model Canvas
- Design 3: Scaling Model.

Templates are to be provided on Pingpong to guide the students through the steps of the assignment.

Assignments and Deliverables of the Deliver part (challenge)

The final assignments of the challenge-based part will be presented by each student group during weeks 11-12. This will include:

- Final presentation,
- Video (2-3 min recording)
- Group written report

Please follow the instructions as provided in the Introduction dated 13th September to understand what additional assignment is expected for completion of the challenge-based part for students' from respective HEI.

Student groups will also receive live feedback on their presented project from the industry partners (Centexbel and WLY).

Overall Schedule

Students should refer to the course calendar for specific meeting dates and times. Activity and assignment details will be explained in detail within each week's corresponding learning module in the synchronous part.

The overall schedule of the course is as follows:

Table 3.2 Detailed Course Schedule

Weeks	Modules	Topics	Activities	Involved partners	Synch (S) / asynch (A)	Teaching/tutoring Hours	Learning / Studying Hours
0/1 (w 36/37) 13/9 (10-11CET)	**WELCOME**	**Intro**	**Course introduction** - Course Briefing and Outlining Topics, - Presenting Course Structure	**HB, POLIMI**	**S**	**1**	**1**
1-3 (w 37-39)	**DEVELOP**		Self-Directed Study: Theoretical Pillars (partner institutions)		**A**	**-**	**15**
4 (w 40) **04/10 (13-15CET)**	**DEFINE**	**THE ICE BREAKER & PROJECT KICK-OFF**	**Team building** - Introduce Course Team and Industry Partners - Student portfolio/team	**Atleast 1 participant /HEI and involved companies (WLY, Centexbel)**	**S/A** **S**	**2**	**2**

06/10 (10-15CET)			building exercise and match-making - Assign Student Groups (10 x groups of 5 – 1 per partner HEI) **Group Tutoring** - An Introduction to the key concepts related to Group task - Interactive brainstorming and guidance **Student Group Assignment – Cross HEI groups** - Design your project company's vision, mission and core values, initial business plan - Ideation of project focus	**HB**	**S** **A**	**30 min per group** -	**1** **3**
5-6 (w 41-42) **11/10 (10-11:30CET)** **14/10 (13-15CET)**		**IDENTIFYING SUSTAINABILITY /SOCIETAL CHALLENGE**	**Industry talk** - 1 hour talk on Sustainability/Societal challenge-driven Innovation in Fashiontech arena by Centexbel and WLY - Q&A with Centexbel and WLY **Preliminary concept pitching by each project group** **Student Group Assignment – Cross HEI groups** - Identify a critical societal/sustainability challenge that your company pivots on - Prepare initial elevator pitch on how your company is guided by the SDGs and what challenges it critically targets	**WLY, Centexbel** **HB**	**S/A** **S** **S** **A**	**1.5 (30 min per company + 30 min Q&A)** **10 min per group** **-**	**1.5** **1** **3**

			through its business plan/report. **Initial Project Proposal/ Feedback** - Group discussions on sustainability/ societal challenge-driven innovation with tutors and project partners to identify finetune project company's vision, mission and core values and business plan - Quickfire presentations of initial ideas - Feedback from tutors - Reflective criticism of one other project				
20/10 (13-16CET)				**Atleast 1 participant /HEI**	**S**	**3**	**2**
7-8 (w 43-44) **26/10 (10-11:30CET)**	**DESIGN 1**	**PROPOSING FASHION TECH SOLUTION**	**Industry talk** - 1 hour talk on Fashiontech solution space amidst sustainability/societal challenges by Centexbel and WLY - Q&A with Centexbel and WLY **Student Group Assignment – Cross HEI groups** - Locating the fashiontech solution rendered by your company - Mapping the value profile (proposition, means to create, deliver and capture these) for your project company - Make sustainable business model blueprint with detailing	**WLY, Centexbel**	**S/A** **S** **A**	**1.5 (30 min per company + 30 min Q&A)** **-**	**1.5** **3**

02/11 (14-17CET)			technology, design, process and value chain dimensions. **Initial Project Proposal / Feedback** - Group discussions on fashiontech solution with tutors and project partners to identify value and value chain maps for your project company - Quickfire presentations of initial ideas for interactions. - Feedback from tutors - Reflective criticism of one other project	**Atleast 1 participant /HEI**	**S**	**3**	**2**
9-10 (w 45-46) **08/11 (10-11:30CET)**	**DESIGN 2**	**SCALABILITY APPROACHES/STRATEGIES**	**Industry talk** - 1 hour talk on Fashiontech scalability and its impact by Centexbel and WLY - Q&A with Centexbel and WLY **Student Group Assignment – Cross HEI groups** - Locating the current scalability challenges and scaling opportunities in the solution provided by your project company - Identifiying approaches/stragies for scaling impacts based on systemic innovation perspective - Reflect on scaling outcomes on SDGs	**WLY, Centexbel**	**S/A** **S** **A**	**1.5 (30 min per company + 30 min Q&A)** **-**	**1.5** **3**

15/11 (13-16CET)			**Initial Project Proposal / Feedback** - Group discussions on fashiontech scalability approaches and hindrances with tutors and project partners to identify scaling logics from a systemic perspective for your project company - Quickfire presentations of initial ideas for interactions. - Feedback from tutors and reflective criticism of one other project	**Atleast 1 participant /HEI**	**S**	**3**	**2**
11-12 (w 47-48) **30/11 (10-14CET)**	**DELIVER**	**PREPARATIONS AND FINAL PRESENTATIONS**	**Student Group Assignment – Cross HEI groups** - Create final project presentation and video **Final presentations and submissions** - Presentations to course team and partners. - Discussion on implications (e.g. societal, ethical) and potential application of developed ideas with project partners (including feedback from Centexbel and WLY, discussion can be held in terms of potential application/practical implications in the industry in general, not for particular company)	**Atleast 1 participant /HEI and involved companies**	**S/A** **A** **S**	**-** **4**	**3** **3**

			- Group report submission and project video				

INTERACT

Using Pingpong platform

You can download the Student's User Guide here:
https://www.hb.se/en/student/my-studies/web--and-mobileservices/ping-pong/

Rules and guidelines

It is important that the students follows a Netiquette in using the forums so that this course is a pleasant experience for everyone.

- Peer respectfulness.
  Please, show respect to the fellow participants. We encourage debate and discussion but only when that is done in a polite and respectful manner. We do not tolerate rude behavior, condescending or abusive words. Instances will be reported and removed.
- Constructiveness in feeedback
  Learning in an online community is about interacting with each other. When commenting or providing feedback on work of others be constructive and whenever possible provide suggestions for improvement.
- Sensitiveness to peers' disciplinary background and culture.
  Students will arrive from different countries and different background. Please be sensitive to this when discussing your own work or results of others.
- Content appropriateness.
  Content that violates the Terms of Service is not permitted. You may not post inappropriate or copyrighted content, advertise or promote outside products or organizations, or spam the forums with repeat content.

/Part 4: Assessment method

Students would work either individually (in the asynchrouons part: DEVELOP) either in teams (in the synchronous part: DEFINE, DESIGN and DELIVER). Individually they are required to follow the lectures, participate to experts webinar and to carry out individual assignment such as exercises and tests. The individual work will be evaluated through the individual assignments.

In teams they are required to develop a Fashion-Tech project, participate to reviews and deliver the final project. They are going to work with their teammates by using the digital tools, such as Miro. During working hours each team will meet professors, experts and teaching assistants to present their work-in-progress. Sometimes these meeting would be informal reviews to help the development of the project. Some other meeting would have the shape of mid-term assessment to verify if the main project mailstones are achieved and also if some needs or problems occurred. The teamwork will be evaluated with a final presentation on a digital platform. The final exam will be held in the form of a digital presentation and a final report.

Students will pass the course if they through a combination of the following activities in this course:

- Attending the theoretical modules
- Completing the quiz and evaluation tests
- Participating actively to the available platforms for peer interaction
- Completing the assignments timely and qualitatively
- Participating to the reviews sessions
- Delivering the final assignment (exam)

Each HEIs will formulate the modality of evaluation of the course for their students.

HOGSKOLAN I BORAS - SWEDISH SCHOOL OF TEXTILES

HB enrolled students are required to accomplish 8 out of 13 quizzes to complete the course theoretical part. In particular:

- any two quizzes from the theoretical pillar 1 on sustainable design (Quizzes 1 - 4);

- any two quizzes from the theoretical pillar 2 on fashion tech interventions (Quizzes 5 - 9);

- all four quizzes from the theoretical pillar 3 on the fashion tech business and impacts (Quizzes 10-13);

Each quiz includes 3-4 multiple choice based questions that cover information presented in lectures. More detailed information on how different quizzes correspond to different lecture materials is provided on PingPong platform. Student's quiz results correspond to individual written exam outlined in HB syllabus. Quiz results to be graded on A-Fx scale and influence the final grade for the course:

- To get an A, students have to answer over 90% of questions correctly (please note the percentage is based on total number of questions answered correctly from all 8 undertaken quizzes).

- To get a B, students have to answer 80-90% of questions correctly.
- To get a C, students have to answer 69-79% of questions correctly.
- To get a D, students have to answer 51-68% of questions correctly.
- To get an E students have to answer 40-50% of questions correctly.
- - If less than 40% of questions are answered correctly, the assigned grade is Fx and individual re-examination will be organised by HB.

To successfully accomplish the course, students also need to comment on each other project ideas during project review phases, as well as during final presentations. At least one individually written review commentary on project ideas of peer groups need to be provided during each project plenary presentation & discussion events (correspond to project phases 1c, 2b, 3b in course schedule) and at the final presentations. In total, 4 individually written comments need to be provided by students in the challenge-based part of the course to gain pass on the 'peer interaction via digital forum participation' as specified form of examination in HB syllabus. The dedicated comments space will be created in the MIRO board where you are expected to leave your comments.

In order to get 'pass' for written group report, your group under your lead has to deliver a brief of 4-5 pages reflecting on the business model development part and scalability approaches as part of the final project. The instructions for short brief/report will be provided at the project kick-off on October 4th.

Finally, to complete the course you need to take part in the final oral presentation scheduled on the 30th of November.

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For full details of assessment and submission procedures please refer to the Collaborative Challenge Unit Handbook.

This unit is assessed holistically (100% of the unit).

- An **individual**, critical self-assessment of your contribution to an agreed collaborative project using evidence to demonstrate how you have developed your creative attributes (2,000 words, with supporting evidence). This should be written with reference to the UAL Creative Attributes Framework.
- Evidence of individual contribution to collaborative documents on digital platfroms, e.g. Ping Pong.
- Evidence of engagement with asynchronous lecture content through participation in 8 multiple choice quizzes associated with the lectures.

Please note UAL guidance on components: Non-submission in a mandatory component will result in a Fail for the unit.

Learning Outcomes and Assessment Criteria

Upon successful completion of this unit you will be able to:

1. Engage in professional networking and negotiation skills to work through collaborative opportunities. ***(Communication)***
2. Evidence an approach to critical collaborative enquiry, advanced project development and presentation. ***(Enquiry; Knowledge)***
3. Interrogate your practice using the Creative Attributes Framework to critically reflect and evidence your collaborative and creative process. ***(Process)***

Assessment will be against the specified assessment criteria.

The assessment website provides an overview of assessment regulations for your course.

Fair Assessment

The University has robust processes in place to make sure that assessment is fair for all students and you can find out more on the Fair Assessment webpage.

As part of its approach to fair assessment the University has an Anonymous Marking Policy. This means that for some assignments the marker will not know the name of the student whose work they are marking.

This assessment will not be anonymously because systems are not currently available for units taken by students from multiple courses. Additionally, you will have worked closely and had formative supervisions and feedback with your group supervisor who will be familiar with your work and will mark your work**.** However, internal moderation and all other elements of the assessment process will remain in place for this assignment to make sure the assessment is fair, accurate and consistent for all students.

Digital Submission

Check your 2,000 word written text via an online submission platform called Turnitin (Feedback Studio) UK. As part of the submission process, the University will utilise Turnitin (Feedback Studio) UK to check the authenticity and originality of your work.

The LCF Digital Learning site includes step-by-step guides to uploading assignments to Turnitin (Feedback Studio) and Moodle.

If you are experiencing technical difficulties uploading your assignment, please contact the e-Learning support team dlsupport@arts.ac.uk.

Please note: These services are only available during office hours

Submission information:

Please note the following:

1. Ensure your work clearly states:
    - Your name and student ID number;

- Your year of study;
- Collaborative Challenge Project title;
- The name of the LCF Supervisor.

2. Do not hand your work in before the hand-in time, unless your Unit Leader has previously agreed to this;

3. Submit your work personally. This is to ensure that it is delivered on time and to the right location;
4. Once you have submitted your work, you will not be able to access it again until after it has been assessed;
5. You must keep an electronic copy of all written and digital work.

POLITECNICO DI MILANO – SCHOOL OF DESIGN

The evaluation of the course will follow these rules. The assessment of preliminary exercises/assignments together with the final presentation will determine whether students passed the course or not.

ASYNCHRONOUS PART (THEORETICAL PART):

For the asynchronous part POLIMI students have to complete and submit the following assignments:

- 4 quizzes from the theoretical pillar 1 on sustainable design (Quizzes 1 - 4);

- 2 quizzes at your choice from the theoretical pillar 2 on fashion tech interventions (Quizzes 5 - 9);

- 2 quizzes at your choice from the theoretical pillar 3 on the fashion tech business and impacts (Quizzes 10-13);

It means they have to follow all the provided video-lectures and answer to 8/13 quizzes. Each quiz includes 3-4 multiple choice based questions that cover information presented in lectures. The achieved grade will depend on the number of correct answers given by the students.

SYNCHRONOUS PART (CHALLENGE-BASED PART):

For the challenge-based synchronous part, each student should be present at least for the 60% of the lectures. The presence to the final presentation to deliver the project is mandatory for every student. The final presentation will be in form of a pitch

The final evaluation will not be based on the arithmetic mean of all grades but will be based on the assessment of the gradual qualitative advancements, in relation to the abovementioned aspects, demonstrated by each team and each team member through the sequence of assignments and activities planned. Individual assessment will be then supported by the quality of the student-professor interaction during weekly review, peer – to - peer evaluation, individual exam.

The evaluation of the final assignment will cover the following aspects:

- Research skills and critical thinking: Understanding of the Brief; quality, level of definition and consistency of the research; quality of sources;
- Creativity and design attitude: Capability to give a critical and original design solution

- Representation skills and graphic project: quality and accuracy of freehand and computer assisted drawing skills, quality of graphic elements to support the visual presentation of the project (graphic layout, colour fidelity, image quality and definition, accuracy in the application of material samples, etc.);
- Team collaboration: Equal share of workload among team members, cohesiveness, and fairness
- Motivation and participation: Timeliness, accountability, active and critical participation during lectures and reviews. Students are expected to participate in all online activities as listed on the course calendar (75% of the steps on a course as complete). Motivation and active participation will be measure also using a peer-to-peer evaluation system, consisting in a team self-evaluation by each team members for each required delivery.
- Commit to Integrity: students are expected to maintain high degrees of professionalism and also integrity in your behaviour in and out of the classroom without using dishones, deceptive and fraudulent means.

ECOLE SUPÉRIEURE DES TECHNOLOGIES INDUSTRIELLES AVANCÉES

Forthcoming

TU/DELFT - INDUSTRIAL DESIGN ENGINEERING FACULTY

The Fashion Tech course is integrated in the IDE curriculum as part of the Research elective ID5502 van 6 EC. Students will have to follow all the theoretical modules and complete the questionnaires and practical exercises related to the different modules. In the synchronous part, the students have to work in groups on the given assignments. The questionnaires, exercises and the final presentation of the team work are all taken into account in the assessment. The course will be graded as sufficient or insufficient and no detailed grading will be used.

Course quality evaluation

Before the end of the course, you will be required to complete a questionnaire for course evaluation that will ask your opinion related to the overall experience to understand your perspective in terms of Context Specific Quality, Knowledge sharing efficacy, Quality of coaching and Satisfaction with educational experience. Part of the questionnaire will also focus on the importance of this course for your future profession and asks your perspective in terms of Improved skills and competences and in terms of relevance of skills for future profession and employability.

Important Note: This syllabus, along with course assignments and due dates, are subject to change. It is the student's responsibility to check the platform on Beep for corrections or updates to the syllabus. Any changes will be clearly noted in course announcement or through email.