ual: london college of fashion

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THE SECRET LIFE OF CLOTHING
Exploring Garment Interactions
International Digital Course

Part 1: Course Information

Course Description

The course focuses on the field of Interaction and Experience Design for Fashion-Tech, exploring how we interact with worn objects on a daily basis and how these interactions can be leveraged to create digitally enhanced experiences. The course aims to understand how such interactions and experiences can promote and sustain repeated use and engagement with a wearable item, extending its lifespan. In doing so exploring the creation of more sustainable wearable technologies, and investigating how they may further address environmental, economic and social sustainability concerns. These considerations and skills will be crucial to future interaction designers wishing to move beyond the current roles of wearable technologies as novelty items and forms of status display with short usage periods before obsolescence.

Contents will be delivered through a preliminary theoretical component aimed to level the knowledge of the students as a prerequisite for the practical and challenge-based part of the course.

The course focuses in particular on developing the knowledge and understanding of new ways to prototype a fashion product that integrates and interfaces with digital technologies, through lectures about example technologies and design research methods.

Students will work in interdisciplinary and international groups to experience the process and methodological approach of collaborative project development activity that includes preliminary design research, design development, low-tech prototyping and project pitching. Students will be selected from:

- 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)

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.

The course is partnered with two main companies leading the sector of Fashion-Tech: Pauline Van Dongen Studio and Sefleuria.

Course Timing

From 29 September 2021 to 1 December 2021

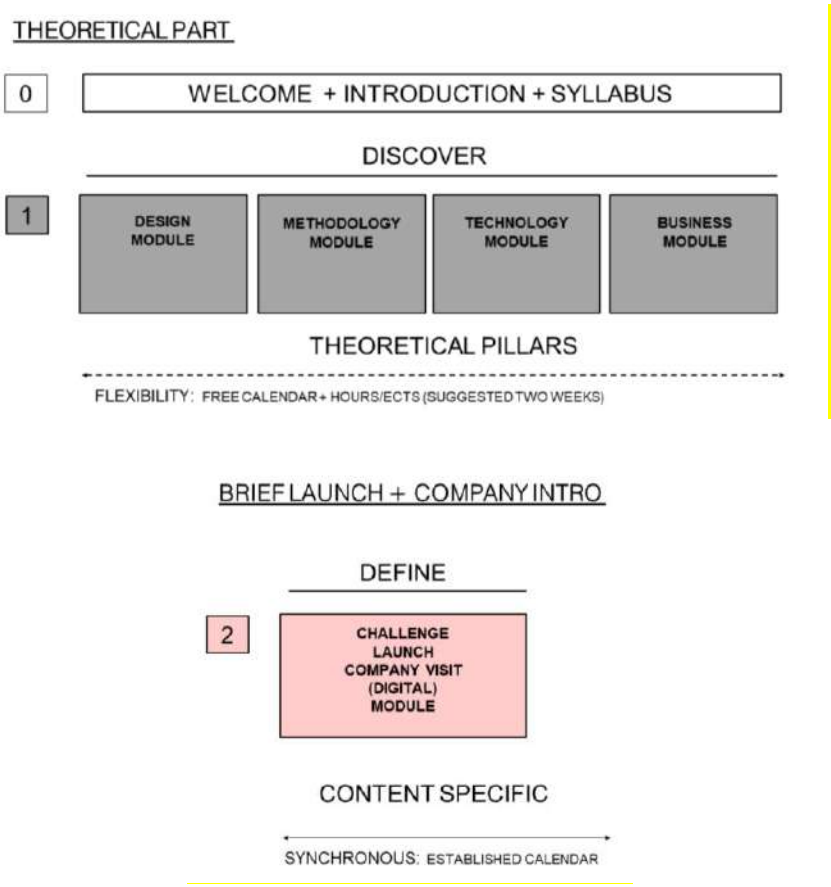
Background

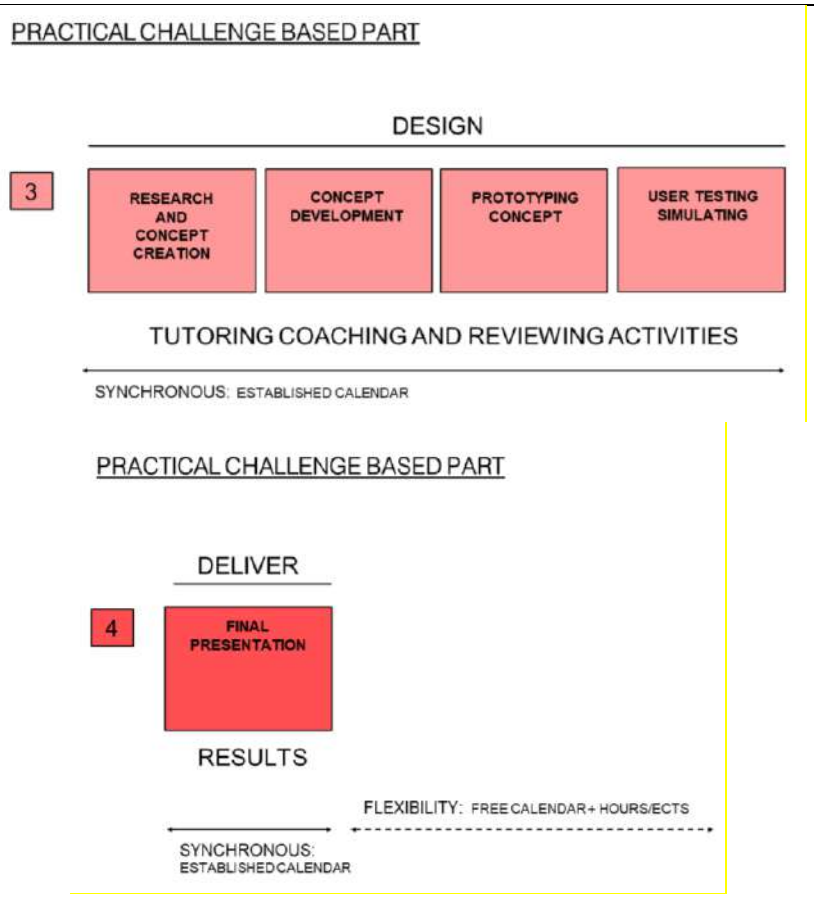
Fashion wearable technologies are often designed for novelty and status display, meaning they are only used for a short time before obsolescence and disposal. This is not sustainable for the planet or their designers, whose business ventures often fail. They can also capture very personal data, which users have little control over. This course explores how to do things differently!

Working in international, interdisciplinary teams to develop collaboration and business skills, the course guides students through a process of research informed design ideation for an interactive wearable technology concept. The challenge-based part of the course introduces low-tech interaction design methods to simulate the data generated by a connected wearable device. Students will also document bodily interactions with existing worn objects and their everyday environment. The secret lives of clothing revealed by this data will be analysed to explore how they can creatively inform an interactive experience? Critically considering the data needed to provide this experience and how it can be ethically used. Teams will showcase their design concept and low-tech interaction prototype in a short video, with an accompanying group presentation to pitch the project.

The course is supported by guest speakers with industry expertise in sustainable design strategies, data ethics and privacy. ‘Theoretical Pillars’ provide additional asynchronous learning content to contextualise the course within broader discourses and competencies related to fashion-tech as a growing industry sector. The course aims to provide students with a background in interaction design methodologies, to meet emerging industry needs.

Course structure





Indicative contents

The digital course will be delivered with a complementary theoretical element delivered in an asynchronous, student led way (Discover) and a synchronous challenge-based part (Design). These two main parts will be launched by a presentation of the challenge through a brief and presentations by mentoring businesses, who will support students in developing a project concept (Define). Students will then present a solution including a video depicting a low tech prototype of their interactive wearable item (Deliver).
The contents of the theoretical part will be delivered through lectures and preparatory quizzes to level the knowledge of students in the five different disciplinary domains of the project: design, material management, engineering, product management and business development. These theoretical pillars focus on:

- Defining Interaction and Experience Design
- Low-Tech prototyping methods for Interaction Design
- Near future trends and far future scenarios
- Sensors and actuators for application in smart textiles

- Sensors and methods for capturing body-based data
- Digital value chain and business model development/experimentation
- Suatainability considerations for Fashion-Tech products
- Circularity and Industry 4.0

In the challenge-based part of the course, students will work in groups to develop a concept for an interaction with a worn object, which will be consistently used throughout the lifetime of the object and potentially even extend its usable life. Additionally the interaction may promote and address the criteria of social, economic and environmental sustainability in other ways. Student groups should develop a comprehensive proposal, tackling design, material management, engineering, project management and business development issues as a whole. Although supporting design research will be carried out by all students, groups will be responsible for assigning tasks relating to the project outcomes, based on the members' specific disciplinary background. Each member of the interdisciplinary groups may take care of the following activities and tasks in order to complete the project and the final assignment:

• Concept definition and design of the interaction/experience/wearable item.
• Low-tech prototyping, including the creation of demonstrators for the project pitch video.
• Business development and business model innovation.
• Project management innovation.

Learning and teaching methods

The course includes both theoretical and practical activities, including instruction, assessments, peer interaction and the final project deliverable.

The preliminary theoretical part consists of 'Theoretical Pillar' lectures divided into four modules of interdisciplinary didactic contents that can be participated in asynchronously. At the end of each lecture students are assigned a quiz to test their understanding of the lecture content. Teaching comprises digital lectures, self-studies, written assignments in form of essays, and preparation of design boards and videos. Students will have the possibility to read and watch extra-materials, engage in discussions and participate in forums.

The brief launch, with webinars with industry experts from partner Companies launches the following practice and challenge based part of the course. Delivered through weekly workshops and group tutorials to help students develop prototypes and proof of concepts to be showcased in the final project presentation and accompanying short video.

Syllabus

This phase of the course is exploratory and requires students to negotiate uncertainty and develop critical responses to a broad brief while addressing data gathered through independent design research.

The following blended teaching and learning methods are employed to support the integrated achievement of the course outcomes. There will be a combination of virtual online asynchronous and synchronous delivery:

- Academic skills for fashion-tech
- Online learning
- Briefings, tutorials and feedback
- Collaborative group project work
- Lectures and seminars
- Presentations
- Research Methods

Language

The language of instruction is English.

Virtual Learning environment

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

- Moodle
- Microsoft Teams
- Miro

These VLEs are used to deliver the online sessions and for students to access the course content, view recorded sessions and upload assignments.

In Moodle, students will access the theoretical part of the course (Theoretical Pillars) that is delivered in an asynchronous way: online recorded lessons, digital materials and resources such as webcast or podcast, documents, readings and multimedia presentations. This theoretical part will be studied asynchronously by students in an individual and self-paced modality. Students are required to follow the lectures and to carry out quizzes to assess their achievements and preparation on the specified topics. This preliminary preparation is linked to the content of each week's synchronous content.

At the launch of the synchronous part of the course, students will be challenged with a specific brief relating to the two Fashion-Tech industry mentors. Online webinars from experts will be delivered, allowing students to gather direct information and to ask questions/interact.

From then on, students will work synchronously in multidisciplinary international groups with a practical assignment to be developed (problem-based learning). They will participate in group-based activities using Microsoft Teams and Miro to build a remote team culture. Both platforms will be accessed from the project's Moodle page. On these two platforms, students are encouraged to work together and are supported by tutors during workshop, tutorial and presentation sessions. The final presentation of project outcomes will be delivered digitally and remotely by groups as a short video and presentation.

Course Requirements

Students own email addresses will be used to access the asynchronous content via Moodle:

(https://moodle.arts.ac.uk/course/view.php?id=66565)

A temporary password will be emailed to participating students to login to the course Moodle page. Passwords should then be updated after accessing Moodle for the first time.

To access this course on Moodle students will need access to the Internet and a supported Web browser (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 d.atkinson@fashion.arts.ac.uk.

At the start of the synchronous element of the course you will be allocated to a student team and receive an invitation to join the course Miro boards. These will be specific to each team. Invitations will again be sent to your existing University email address. If you do not already have a Miro account you may need to register so that you can access the boards.

System requirements

- Reliable Internet connection
- Laptop/PC with webcam
- Microphone and headphones (recommended)
- Mobile phone with camera
- An up-to-date web browser (Firefox or Chrome recommended)
- Course specific materials like drawing materials, camera, fabrics

Software for digital and remote co-working

Prior to start the course, students need to download, install and try the following software:

- Microsoft Teams *(download and install the desktop app: it takes 2/3 minutes)*
- Miro *(create a free account: it takes 2/3 minutes)*

Software for project development

No specialist software is required for project development

Course Materials

For the Discover part (asynchronous theoretical part):

- An in-depth series of 'Theoretical Pillars' video lectures (27 videos)
- A comprehensive set of quizzes testing your understanding of the video lecure content.

Recommended Texts & Other Readings

In addition to the Bibliography below, further readings, websites and reference videos will be added to the Resources tab of the Moodle page throughout the course.

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Recommended studios and designers:
https://www.yosukeushigo.me/
http://marloestenbhomer.squarespace.com/
https://www.field.io/project/microsoft-responsive-potential/
http://www.studiopsk.com/

Student participation

Up to 30 students from the following Universities will be selected to create the classroom:

- 10 - 15 students from Politecnico di Milano – School of Design (POLIMI)
- 10 - 15 students from University of the Arts London – London College of Fashion (UAL-LCF)
- Up to 5 students from TU/Delft - Industrial Design Engineering Faculty (TUD)

The teamwork configuration in the Design phase will be constituted of 10 groups of about 3 people with an interdisciplinary scope.

Student profile from each HEI:

HEI	Students profile
POLIMI	First and second year students of the MA - DESIGN FOR THE FASHION SYSTEM (School of Design) and MA – INTEGRATED PRODUCT DESIGN (Shool of Design)
UAL-LCF	First year students from across the range of LCF MA and MSc courses.
TUD	MA students from the faculty Industrial Design Engineering at the Delft University of Technology

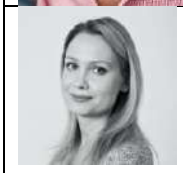
Teaching staff Information

Instructors list

Image	Name, Surname (Affiliation)	Biography
	Douglas Atkinson (UAL)	Douglas is a Lecturer in Wearable Technology at London College of Fashion (LCF). He has a background in fashion pattern cutting, working with sustainable micro businesses and large international luxury brands. Douglas is currently completing a PhD at UCL Knowledge Lab investigating the role of touch in garment design development, and the potential for digital technologies to support garment designers' touch practices. His research at LCF's Digital Anthropology Lab has explored methods of digitally capturing the sensory and emotional experience of designing and making clothing.
	Alexa Pollmann (UAL)	Alexa likes to collaborate, co-create and facilitate. She describes her work as 'Design Culturing' and whilst her practice is body-centric, she constantly seeks to challenge the current notion of 'wear'. Originally a fashion designer, Alexa is Subject Leader for Wearable Technology at London College of Fashion and holds a Masters Degree in Design Interactions from the Royal College of Art.
	Ella Sharp-Mitchell (UAL)	Fashion Academic specialising in design & product development, production and marketing. Fashion creative, designing and producing womenswear in the UK, founder of 'esharpstyle'. Currently the course leader for the MDes International Fashion Production Management course at London College of Fashion, Ella is a graduate of Kingston University with over 30 years of diverse professional and academic experience. Independent practice has focused on overseeing the whole process of 'concept to customer' including design, manufacture and retailing both Ready to Wear Limited Editions and collaborations with clients in bespoke projects ranging from tailored daywear to tango performance pieces for internationally renowned dancers. This experience is key to Ella's ability to work with students on a

		diverse range of projects in different markets and products types.
	Daria Casciani POLIMI)	PhD in Design, is Assistant Professor at the Design Department of Politecnico di Milano teaching Design for Fashion system, teaching about the Innovative use of advanced manufacturing and technologies enabling Fashion-Tech projects. In 2015, she started teaching at the School of Design of the Politecnico di Milano, as adjunct professor in the Interior Design Courses and at the at the Master in Lighting Design & LED Technology. Besides, she has collaborated to the research activities of the Laboratorio Luce, and since 2019 she is part of the research group Fashion in Process at the Politecnico di Milano.
	Erminia D'Itria (Polimi)	Designer, PhD Candidate at the Department of Design, Politecnico di Milano. She is part of the Research Collective "Fashion in Process" of the Department of Design of Politecnico di Milano. Her research interests concern sustainability issues in an environmental, economic, social and cultural context in which the role of design is to be a catalyst for innovative solutions. She deals with the relationship between design and production processes with particular attention to the study of the supply chain of the fashion system in support of its transition towards a sustainable paradigm. In this context she has developed an in-depth knowledge on biomimetic and regenerative design of materials with a focus on the development of new sustainable business models for the fashion industry.
	Livia Tenuta (POLIMI)	PhD in Design, Livia Tenuta is Assistant Professor and Fashion Design Program Board Secretary at Politecnico di Milano, Design Dept. Her research is dedicated to future scenarios and innovation for fashion, focusing in particular on wearable accessories. She is faculty member and vice-director of the 'Fashion Direction: Brand&Product Management' post graduate course at the Milano Fashion Institute. Since 2014 she is curatorial coordinator at the Museum of Jewellery in Vicenza, the first museum in Italy dedicated to jewellery.

		Among her publications: Fashion in the Age of Technology (Aracne, 2020), Jewellery& (Marsilio, 2018), Skin (Marsilio, 2016), Around the Future (Marsilio, 2014).
	Susanna Testa (POLIMI)	Susanna Testa, PhD in Design, is Assistant Professor at the Design Department of Politecnico di Milano. Her research focuses on interaction and technological innovation within the field of fashion, benchmarking state-of-the art initiatives, technologies and products related to the fashion ecosystem. Among academic activities, Susanna lectures at the Bachelor's courses in Jewellery and Accessory Design working primarily with emerging manufacturing technologies, Fashion Illustration and Portfolio & Digital Branding (Politecnico di Milano) and she is didactic coordinator of the Master in Accessory Design and of the Master in Fashion-Tech (POLI.design). She is part of the faculty of the Master in Fashion Direction: Brand & Product Management at Milano Fashion Institute (consortium of Bocconi, Politecnico di Milano and Cattolica universities). Among her publications: "Jewellery Between Product and Experience: Luxury in the Twenty-First Century" in "Sustainable Luxury and Craftsmanship" (Springer, 2020) and "Fashion Tech Today" and "Future Scenarios" in "Education for Fashion Tech. Design and Technologies for Future Fashion Creatives" (Nielsen Book, 2020).
	Marie Youngjin Chae (TUD)	Youngjin Chae (Marie), PhD in Textile Science (Yonsei University, Korea, 2014), is Post-doctoral researcher at Emerging Materials group, TU Delft in the area of smart textiles and wearable system. Her research interests include developing (i) smart textiles with enhanced performance and comfort, (ii) technologically-intensive design framework for smart clothing and wearables, and (iii) wearable electronics for smart cities and future living. She a founder of Lifetech wear PTE LTD., which aims to provide solution of 'EVERYTHING SMART YOU WEAR', from idea conceptualization to product development of smart clothing system and wearables.
	Alice Buso (TUD)	Alice Buso obtained her MSc Integrated Product Design at the Faculty of Industrial Design Engineering at TU Delft (the Netherlands, 2019).

		After a year as a researcher on soft robotics and comfort at the same university, she is now PhD candidate in the Emerging Materials group. Her research focuses on the seamless integration of Smart Textiles into our everyday lives. The goal of her work is to create interconnected Smart Garments and to explore to what extent they could positively influence human behaviour in the context of active living.
	Kaspar Jansen (TUD)	Kaspar Jansen is a professor at the Industrial Design Engineering faculty of TU Delft focussing on smart materials and textiles with sensor and actuator functions
	Olga Chkanikova (HB)	Olga works as a Senior Lecturer in Textile Management at the University of Borås. She holds a PhD in Industrial Environmental Economics from Lund University. Her research interests pertain to sustainable supply chain management, standardization & certification, and how digitalisation affect the business practices in fashion value chains. In her research she applies the institutional perspective exploring what new (inter-) organisational structures, 'rules of the game' and capabilities need to be developed to ensure that adoption of digital technologies delivers the desired business benefits. Olga also worked as research fellow at UNEP, and collaborated with European Topic Centre on Sustainable Consumption and Production (ETC/ SCP) at the European Environmental Agency (EEA).
	Jonas Larsson (HB)	System innovator within apparel- and textile value chains with a vision of positive environmental and social impact. Much in line with the principles of a circular economy from Ellen McArthur. The core idea of Jonas' research approach is that most established systems work well enough for enough many stakeholders to benefit enough from it, but they often have redundant and unnecessary processes. By understanding these systems, innovation potential is identified and solutions designed and demonstrated. These solutions are politically, culturally and technically feasible systems that better fulfil stakeholder's demands and wishes and where the redundant and

		unnecessary processes in the benchmark system cannot exist. Jonas' research focus on minimizing wastes and to create positive impact. Projects typically pivot around the creation of resource efficient apparel and textile systems. This includes development and implementation of new sales channels, different approaches to productand material development, and novel logistics and production solutions for more sustainable value chain management.
	Rudrajeet Pal (HB)	Rudrajeet is a practitioner, consultant, advisor, researcher and educator within the field of textile and fashion for over 15 years. He is Associate Professor in Textile Value Chain Management at Swedish School of Textiles, University of Borås, and holds a doctoral degree in engineering, specifically on resilience and risk management of textile and clothing firms. He has also worked as an expert for many organizations, such as United Nations Economic Commission for Europe, Swedish National Platform for Sustainability, European Technology Platform for Fibres, Textile and Clothing (ETP) etc.
	Vijay Kumar (HB)	Vijay is a Senior Lecturer in the Department of Business Administration and Textile Management at the Swedish School of Textiles, University of Borås.
	Bixente Demarcq (ESTIA)	Bixente Demarcq: Design engineer. Graduated from ESTIA in 2020, Bixente followed a double degree course "product development, sustainable development option" at the English University of Wolverhampton. He also followed a semester of study at EAFIT in Medellin dedicated to the implementation of innovation processes focused on CSR areas. For his 6-month end-of-study mission, Bixente worked for French brands/manufacturers on shoe dismantling and more specifically on material recovery processes. It is this experience as well as the conclusions of the study which are valued by this workshop. Bixente is attached to the CETIA team dedicated to automated and intelligent processes to develop the competitiveness of a textile and footwear recycling sector. Bixente is in charge of eco-design and

		material valorization issues and accompanies companies in the application of circular processes.
	Alex Marquoin (ESTIA)	Alex Marquoin graduated from the Ecole supérieure des technologies industrielles in France and the University of Salford in the UK where he specialized in robotics and automation. He is a robotics engineer and currently in charge of robotics at CETIA for one year. CETIA is a technological platform dedicated to the automation of circularity in fashion and textiles. He is therefore at the heart of the 4.0 industry applied to the textile industry. He is involved in different projects in order to find economically viable solutions to be implemented on our territory. In particular, he is working on the development of automated processes allowing the dismantling and recycling of different products (footwear, clothing, bedding). He is also working on processes that facilitate product design, production on demand and material sorting. Thus he designs processes and develops them using different technologies: robots, artificial intelligence, augmented reality, virtual reality... Sustainable development is also at the heart of his work and his convictions in order to improve the environmental impact of the industry and in particular the textile industry which is one of the most polluting in the world.

In case of necessity (in terms of the overall contents and structure of the course, students would refer to the teaching assistant staff via e-mail *using the following contacts:*
d.atkinson@fashion.arts.ac.uk; a.pollmann@fashion.arts.ac.uk
In terms of specific requests on single subjects of the course, students might refer to the appropriate teaching staff.

Part 2: Course Objectives

The general purpose of the course is to train future professionals in transferable interaction design research skills, applicable to a wide range of user centred technology and experience design contexts. Additionally, to support them in developing critical responses to current issues in the fashion wearable technology sector, particularly in relation to sustainability and ethics.

To do this the course aims to provide students with tools to critically address contemporary social challenges in their development of interactive wearable technology concepts and low-tech prototype interactions. In response to the increasing public awareness of data privacy issues and the negative environmental impacts of the fast fashion and consumer electronics industries, students will be facilitated to explore sustainability and ethics holistically as including: identification of preferable futures as design contexts; the creation of genuinely useful interactive designs which merit repeated use, remaining in circulation longer; ethical sourcing, supply chains and social responsibility; use of less harmful materials; design for disassembly and end of life; economic sustainability; and data capture and usage by interactive fashion-tech products.

Through an innovative combination of contextual asynchronous learning in ‘Theoretical Pillars’ and a challenge based 8 week taught programme, students will gain understandings of a range of interaction design research methods which they will use to gather and analyse primary data. Developing research skills while exploring the design context and use of a wearable technology item.

The taught programme will be delivered through collaborative activities in diverse, international, interdisciplinary groups. Developing students’ teamworking skills to prepare them for employment in the interdisciplinary field of fashion-tech.

Based on their primary research into the everyday lives of worn items, student teams will be asked to develop a design concept and prototype interaction for an interactive experience facilitated by an accompanying wearable fashion item. Considering sustainable principles, data ethics and long-term utility as well as aesthetics. Students will be coached in pitching their design concept in a manner appropriate for industry and investors, leading to the production of a video and accompanying project presentation. The video should include concept demonstration showcasing the interaction design and low-tech interaction prototype. Supporting online Miro development boards will be contributed to by each student to demonstrate and reflect on their personal development.

Hence, the challenge-based phase aims at training adaptive professionals able to collaboratively deliver a professional level project in the field of fashion-tech, or in other sectors requiring the combination of a creative attitude, research informed proposals and sensitivity to economic, social, ethical and environmental impacts.

Learning Outcomes

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

- Select appropriate interaction and UX methods to conduct rigorous primary research into everyday behaviours and interactions.
- Critically analyse primary research data and apply findings to design development for interactive wearable technology.
- Apply in-depth understandings of social, environmental and economic sustainability to the development of systems and product design for interactive wearable technology.
- Recognise key issues related to data ethics and propose solutions to manage and mitigate then when designing digital systems and products.
- Present design outcomes orally and visually in a professional manner appropriate to a wearable technology product pitch.

Part 3: Topic Outline and Course Schedule

DISCOVER

The course includes both theoretical and practical activities with 8 weeks / 31 hours of frontal learning and 100 hours of student work: The activities include lectures, instructions, assessments, peer interactions and the delivery of a final project.

The preliminary theoretical part is divided into modules of contents with an established number of hours for each. Given the fact that these modules can be participated asynchronously (possibility to read materials, engage in discussions, watch videos, and participate in blogs), the modules are delivered in the first two weeks, from 29 September to 13 October 2021 with flexible deadlines. Due to differences in Academic term times, students at London College of Fashion will take part in the asynchronous content in parallel to the Challenge Based part of the course from 13 October 2021. In this phase, assignments are programmed with a very tight schedule: at the end of each module students are assigned a number of small tests or exercises to keep them paced with the course. The asynchronous part of the course consists of 16 hours of lecture content plus associated tasks.

The asynchronous modules will be delivered through lecture videos from the design, technology, methodology and business perspectives. The topic and related methods and/or tools are introduced in videos by the relevant lecturer. There is a quiz after each lecture that students have to complete also to test their knowledge.

While students can choose lectures based on their interest, there are five lecture videos which are compulsory as they relate to the synchronous teaching. These are indicated in the table below. As they relate to the taught content of the course, students may wish to watch these lectures before the relevant week's teaching (see Course Timetable). Students **must view a minimum of three additional lectures to pass the course, bringing the total number of lectures to eight.** However students may choose to view up to ten additional lectures.

The lectures will be preparatory to the challenge-based part, so they are a very important part of the course to inspire and inform you.

Weeks / Days - Calendar	Topics	Short Description	Teaching staff	Teaching/ tutoring Hours
	DESIGN MODULE:			
From 29 Sept to 1 Dec 2021	**D1-Fashion-Tech Today**	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	Susanna Testa, Livia Tenuta (POLIMI)	0.5

		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?		
	D2-Social imaginaries of emerging & near future technology	Exploration on how collective understandings of technology and futuristic design can shape the development of new products. Using the concept of Sociotechnical Imaginaries, the presentation introduces ways in which Social Scientists are engaging with design methods to explore people's fears, hopes, desires and understandings in relation to emerging and near future technologies. This helps to speculate on the impact of these technologies on society and make recommendations for their future design development. To conclude, the Gartner's Hype Cycle is used to map social expectations of emerging technology against what the technology can currently deliver.	Douglas Atkinson (UAL-LCF)	0.5
	D3-Designing far future scenarios	Introduction to world building and far future speculative design examples and to 'what if' design scenarios. The A/B listing technique as used by Dunne & Raby will help to contextualise the reasoning behind the speculative design technique and to critically engage with the design process and the kind of future people want and what role designers play in its creation.	Alexa Pollmann (UAL –LCF)	0.5
	D4-Designing Experiences and Interactions *** Compulsory Lecture**	This lecture gives an introduction to the history and contemporary practice of Interaction Design and User Experience. It highlights our transition from the Information to the Experience Age, exploring the move away from the production of products to the production of experiences, illustrated through the examples of gamification and performance economy.	Alexa Pollmann (UAL –LCF)	0.5
	D5-Fashion Design for Sustainability: The Four Pillars	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	Erminia D'Itria (POLIMI)	0.5

		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.		
	D6-Towards a Sustainable Production Model for the Fashion Industry	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.	Erminia D'Itria (POLIMI)	0.5
	D7-Sustainable Fashion Materials as a Positive Vector	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.	Erminia D'Itria (POLIMI)	0.5
	D8-Waste Materials > Materials From Waste	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	Erminia D'Itria (POLIMI)	0.5

		sustainable solutions for the fashion system with a focus on the relationship between materials and waste: WASTE MATERIALS & MATERIALS FROM WASTE.		
	METHODOLOGY MODULE:			
	M1-Defining near future trends	Discussion on how we can identify and visualise societal behaviours, enabling us to: • critically edit and refine information available to us from a variety of sources enabling us as designers to generate ideas for fashion tech products, processes or services • create a research resource as a basis for designing a 'fashion tech' product.	Ella Sharp-Mitchell (UAL – LCF)	0.5
	M2-Low-Tech Prototyping for High Tech Designs *** Compulsory Lecture**	In this lecture three types of low tech methods for developing an interaction design concept are discussed. First, Storyboarding and Wireframing as methods which use drawing to explore the stages of an interaction in detail; second Paper Prototyping and rapid prototyping as methods which use simple mock-ups of an interactive experience; and finally Bodystorming, a method using acting and physical props to re-create the situated and embodied experience of an interaction.	Douglas Atkinson (UAL-LCF)	0.5
	M3-Internet of Things and Thing Centred Design *** Compulsory Lecture**	This lecture introduces the concept of the Internet of Things and briefly discusses the history of connected wearable technologies. Next it outlines the principles of 'Posthuman Ethnographies' and 'Thing Centred Design' as approaches to document, understand and analyse the life of a non-human thing and its everyday interactions with humans and other things. Finally the lecture concludes by exploring how this analysis can inform the development of design requirements for an IOT fashion wearable.	Douglas Atkinson (UAL-LCF)	0.75
	M4-Research and Design Around People: an overview of qualitative research methods	The lecture will provide an overview on the importance of putting people at the centre of the research and design process by presenting and specifying different ways of doing so. In this lecture you will also learn what is qualitative people centric research methodologies that could be used in your design practice. By comparing the different methodologies, the	Daria Casciani (POLIMI)	0.5

		lecture will give you a general overview on the possibilities to guide on which specific methods and techniques to use. The lecture will also provide insights regarding how to conduct ethical user-oriented research. This is finally helpful in giving basic information related to how to fit user research into the design process, planning user research projects that are valid and ethically sound.		
	M5-Ethnographic Research Methodology	The lecture will focus on ethnography, providing an historical overview and definition from its beginning in the anthropological discipline. This lecture will describe the main principles, features and opportunities of ethnography referring to the practices and processes associated to ethnographic research, the main tools and strategies such as observational studies, interviews and participants provided contents and related field notes. In addition the lecture will highlight the main type of ethnographic research methodologies, applied to design and architecture (such as focused ethnography) and also happening in the digital realm (such as digital ethnography, virtual ethnography and netnography.	Daria Casciani (POLIMI)	0.5
	M6-Design Ethnography for Fashion-Tech	The lecture will focus on the application of ethnography in the design discipline (Design Ethnography), referring to the different strategies, methods, techniques and tools (observation, interviews, participants provided contents, and related field notes) used to develop user experience research for fashion-tech design products and services, considering people-technology interactions that need to tackle more complex issues in the ethnographic research: design ethnography becomes based on visual artefacts, considers sensory perception and experiences, it is multi-sited, post human and entangled.	Daria Casciani (POLIMI)	1
	M7-Measuring product experience: methods and tools	Overview of Smart Textile as an advanced material and interface between the user and the environment. To measure the experience of smart textile products, wearability of smart clothing and	TUD	0.5

		wearable system will be identified by three dimensions of comfort. Tools and methods of evaluating physiological, biomechanical and emotional comfort will be shared, respectively.		
	TECHNOLOGY MODULE:			
	T1-Sensors and actuators for application in smart textiles	Overview of simple, off-the-shelf sensors which can be used in smart textile projects as well as examples of how to connect them in an electronic circuit. The need and function of microcontroller boards is explained and links to DIY smart textile projects are provided	TUD	0.5
	T2-Soft and textile based sensors	For durable, unobtrusive and washable smart textiles soft and preferable textile based sensors are needed. In this lecture examples and the basic principles needed to create sensors from conductive yarns and fabrics are outlined.	TUD	0.5
	T3-Sustainability in Smart Textiles	'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.	Marie Chae (TUD)	0.5
	T4-Capturing Body Data *** Compulsory Lecture**	This lecture gives an overview of on-body sensors, including biosensing technologies. Discussing the ways other kinds of personal information (for example emotional states) can be revealed when linking body data to other commonly captured information. The lecture then explores contactless methods to capture similar information using computer vision, questioning which use cases are still appropriate for body-based wearable sensors.	Douglas Atkinson (UAL-LCF)	0.75
	T5- 4.0 technologies at the service of circularity	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	Alex Marquion (ESTIA)	0.5

		technologies in the service of circularity.		
	BUSINESS MODULE:			
	B1-SDG operationalisation for digital fashion value chains	Introducing SDG progression tool Explaining how to operationalise SDG goals to decide on strategic areas for digital fashion value chains, their improvements and transformation.	Jonas Larsson (HB)	1
	B2-Perspectives on digital value chain and business model development/experimentation	Explaining digital fashion business model design and components Organizing local production of digitized design through advanced manufacturing	Rudrajeet Pal (HB)	1
	B3-On the role of policy-making and digital institutions to support digital social innovation	Defining the concept of digital institutions. Discussing a 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.	Olga Chkanikova (HB)	1
	B4-Traceability along garment production supply chain	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. LEARNING OUTCOMES: 1-Knowing the different stages in the garment production supply chain 2-Knowing the challenges of traceability and the return of data to the consumer 3-Traceability technologies	Demarcq Bixente (ESTIA)	0.5
	B5-Business model scalability: on scalability of impacts and associated business strategies	This lecture introduces the concept of scale and scalability in the context of business models. It introduces business scaling from a social innovation perspective and provides examples from projects and practice in relation to business model scaling.	Rudrajeet Pal (HB)	1
	B6-The Pitch *** Compulsory Lecture**	In this lecture best practices for presenting and communicating a technology concept will be discussed, focussing on developing a project identity and an elevator pitch, and how to package specialist knowledge to ensure accessibility. The lecture will present examples to highlight the fine balancing act between visual and technical information.	Alexa Pollmann (UAL –LCF)	0.5

Syllabus

	B7-Textile industry supply chain management in the context of industry 4.0	This lecture gives an overview of Textile Industry 4.0 frameworks and contributing technologies, introducing key challenges.	Vijay Kumar (HB)	1
				total 16

Course Timetable

Except where otherwise stated all sessions take place on Wednesday mornings from **9am – 13.30pm UK / 10am – 14.30pm EU** including a one hour break from 11.30 to 12.30 UK / 12.30 to 13.30 EU.

Microsoft Teams links to each online session can be found in the weekly tiles on the course Moodle.

Weeks	Topics	Activities	Synch (S) / Asynch (A)	Teaching / Tutoring Hours	Learning / Studying Hours
1-2 **29th Sept & 6th Oct 21**		Self Directed Study: Theoretical Pillars	**A**	**-**	**10**
3 **13th Oct 21**	**DEFINE: Course Introduction**	**Course launch with Douglas Atkinson, Alexa Pollmann, Pauline Van Dongen and Jessica Graves** - Introduce Course Team - Industry Partner Presentations - Set Course Brief and Outline Topic - Present Course Structure - Assign Student Groups (10 x groups including 1 student per partner institution) Self Directed Learning Task: Meet your student group via MS Teams. Discuss what interactivity and sustainability mean to you, collect refrences on your Miro board. Self Directed Learning Task: Watch **Designing Experiences and Interactions** and **Low-Tech Prototyping for High Tech Designs** Theoretical Pillar lectures in preparation for next week's activities.	**S**	**3.5**	**2.5**
4	**DESIGN:**	**Movement and interaction workshop with Alexa Pollmann**	**S**	**3.5**	**3.5**

Syllabus

20th Oct 21	**Interaction and UX**	Self Directed Learning Task: Identify everyday interactions with garments and worn objects on your Miro board. Self Directed Learning Task: Watch **Internet of Things and Thing Centred Design** Pillar lecture in preparation for next week's activities. **Sign up for group tutorial time slots next week.**			
5 **27th Oct 21**	**DESIGN: UI / UX** **Interaction Design research**	**Group Tutorials with Douglas Atkinson – discussing interactions with worn objects, identifying an object to research and methods to capture its life and use.** Self Directed Learning Task: individually select a worn object and document its 'secret life' over the course of 5 days. Conduct an interview with your chosen object. Document this on Miro. Compare your research among your team to identify design opportunities. Self Directed Learning Task: as a group, create a proposal for an interaction and associated worn object	**S**	**3.5**	**10**
6 **3rd Nov 21** **EXTRA PM CLASS 14.00 – 17.00 UK / 15.00 to 18.00 EU**	**DESIGN: Initial Project Proposals** **Interaction Design research** **Data Ethics**	**AM - Initial Project Proposal pitch to Douglas Atkinson, Alexa Pollmann and Pauline Van Dongen** - Pitch initial interaction ideas to industry mentors for feedback **PM – Lecture: Jessica Graves – Fashion Data Ethics** **Feedback on work in progress with Jessica Graves** Self Directed Learning Task: Watch **Capturing Body Data** Pillar lecture in preparation for next week's activities. Self Directed Learning Task: iterate and develop your proposed interaction based on mentor feedback. Capture your thinking and development on Miro.	**S**	**6.5**	**6**

Syllabus

7 **10th Nov 21**	**DESIGN: Sustainable Design** **Data Ethics**	**Approaches to sustainability workshop with Douglas Atkinson** - Explore how to address environmental, economic and social sustainability through interactions. - Identify where your interaction might capture or use personal data and explore options to mitigate this or manage the data securely. Self Directed Learning Task: iterate and develop your proposed interaction to address an additional aspect of sustainability. Capture your thinking and development on Miro. **Sign up for group tutorial time slots next week.**	**S**	**3.5**	**6**
8 **17th Nov 21**	**DESIGN:**	**Group Tutorials with Douglas Atkinson and Alexa Pollmann – discuss developing ideas, how to prototype and refine them.** Self Directed Learning Task: Explore narratives and presentation methods for the project pitch and concept video. Document progress on Miro. Self Directed Learning Task: Watch **The Pitch** Pillar lecture in preparation for next week's activities.	**S**	**3.5**	**6**
9 **24th Nov 21**	**DELIVER: Final Concept Pitching**	**Project pitching and presentation workshop with Alexa Pollmann** Self Directed Learning Task: Develop and refine project pitch and concept video for submission. Document progress on Miro.	**S**	**3.5**	**10**
10 **1st Dec 21**	**DELIVER:**	**Final Presentation to peers, industry and academic partners for feedback** - Each team will have a total of 10 minutes to showcase their short video and pitch their project to the audience, plus 10 minutes feedback.	**S**	**3.5**	**-**

Students should refer to the weekly tiles in the project Moodle page for specific meeting dates and times, activity and assignment details.

DELIVER

Assignments and Deliverable

Holistic summative assessment is based on the following course deliverables:

- Project Concept Video – 2 min max. depicting proposed interaction and wearable item - Please upload your final project video to a hosting site such as YouTube or Vimeo and provide a link in your Miro board and written submission. Do not post video to Miro as this causes it to load more slowly and makes the site unresponsive.
- Final Project Presentation. Please submit as a PDF file (it is easy to convert a PowerPoint or Keynote presentation).
- 2000 word **Group** Report, describing your project development.
- Online portfolio of design development on Miro.
- Evidence of reflection on personal and peer work (comments and feedback) on Miro and Moodle.

- LCF STUDENTS ONLY – Individual Reflective Report, discussing your contribution to the collaboration and experience of the collaborative process – (2000 words pdf. structured by the UAL Creative Attributes Framework)

Templates

Templates and specific areas to upload comments and visual materials will be provided on the Miro platform.

Share your work

If you want to get direct feedback from tutors and your peers in an open conversation we suggest students share their work via Miro and arrange to attend a tutorial session with the course tutors.

Final Presentation

The final project presentation will take place on 1st December 2021. This is an opportunity not only for the project to be assessed, but to gain feedback from industry partners.

A project video demonstrating your proposed interaction design is a key deliverable of the course. Your video has a maximum length of 2 minutes. If you when using a hosting site (for example Youtube or Vimeo) double-check if it works and if it is available for anyone watch. While making a video make sure if there is enough light and that you talk clearly.

To accompany the video you will be asked to develop a project pitch, as if you were professionally pitching your interaction concept to a potential investor, or technology partner. You will be assisted to develop your pitching skills during the synchronous teaching.

In total you will have no more that 10 minutes to present your project pitch and video.

INTERACT

The discussion forum is an important tool on the Moodle platform to share and discuss your insights, exercises and reflections. It allows students to learn from peers. Additionally comments on peer work on the Miro board allow you to share thoughts and gain feedback.

In this course, an important part of the learning happens through discussion. The Miro and Moodle platforms are all about the students sharing their thoughts and showing their work to peers and inviting them to give feedback. Sharing on will also give teachers the possibility to interact with students during the asynchronous part of the course. We suggest to share experiences and exercise results, post questions and instigate discussions.

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 will work either individually (in the asynchrouons part: DISCOVER) or in teams (in the synchronous part). Individually they are required to follow the lectures, participate in experts webinars and to carry out individual assignment such as exercises and tests.

In teams they are required to develop a Fashion-Tech project, participate in project reviews and deliver the final project pitch plus accompanying video. The individual work will be evaluated through multiple choice quizzes associated with the asynchronous lectures. The teamwork will be evaluated with a final presentation on a digital platform.

Students are required to develop the assignment woking collaboratively with their teammates by using 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 will be informal reviews to help the development of the project. Some other meetings will take the form of mid-term assessment to verify if the main project mielstones are achieved.

The final exam will be held in the form of a presentation of the project, consisting of a short video and project pitch.

Students will meet the objectives listed above through a combination of the following activities in this course:

- Attending the theoretical modules
- Completing the self-assessment and the 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)

Please refer to the information below for specicfic assessment guidelines relating to each partner University.

POLITECNICO DI MILANO – SCHOOL OF DESIGN Student Assessment Method

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 select lectures and to answer to the related quizzes. In particular, the selection of lecture will be:

- 2 lectures and 2 quizzes from the design module;
- 2 lectures and 2 quizzes from the methodological module;
- 2 lectures and 2 quizzes from the technological module;
- 2 lectures and 2 quizzes from the business module.

It means they have to select the lectures that they find more interesting and appropriate to their learning path. The mandatory minimum number of lecture is 8 and the mandatory minimum quizzes to be completed are 8. The rest of the lectures are available to students to deep dive into specific topics. 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 dishonest, deceptive and fraudulent means.

TU/DELFT - INDUSTRIAL DESIGN ENGINEERING FACULTY Student Assessment Method

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 a minimum of 8 theoretical pillar lectures and complete the questionnaires and practical exercises related to them. 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.

UAL: LCF Student Assessment Method

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. Miro.
- Evidence of engagement with asynchronous lecture content through participation in a minimum of 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 upload your final project video to a hosting site such as YouTube or Vimeo and provide a link in your Miro board and written submission. Do not post video to Miro as this causes it to load more slowly and makes the site unresponsive.

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.

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 on the course Moodle site for corrections or updates to the syllabus. Any changes will be clearly noted in course announcements or through email.