



Study Abroad - Certificate in Textile Engineering – Fall semester

30 ECTS credit program

Programme Modules:

Module	ECTS
Digital Construction 1	3
Digital Construction 2	2
Textile Ecology and Sustainability	3
Circular Economy 1	3
Social Aspects and Ethics	2
Industry-related project	12
Clothing Physiology	3
Smart Textiles	2

Further Information / Contact:

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International relations

Study Abroad Certificate in Textile
Engineering
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Study Abroad Certificate in Textile Engineering - Fall

Module: Digital Construction 1

Key facts

Workload	ECTS	
90 h	3	
Parts of the module	Contact time	Self-study time
	30 h	60 h
Module leader	Assessment	
Prof. Marina Baum	Homework Assignment	

Curriculum Outline

Students will get specialized theoretical knowledge in the areas of researching international trends for clothing, developing a mood board, basics of pattern design, pattern development and modification of pattern pieces.

Key content

- Construction process in the clothing industry
- Basic terms and definitions: Construction systems, body measurements, construction measurements, finished measurements
- Structure of sizing systems, serial measurements, size charts, fit classes
- Basic construction of ladies' blouse with bust dart (1:4)
- Development of production pattern with seam allowances, labelling and markings
- Construction of small parts, pattern variations, dart placement
- The above topics are constructed on a scale of 1:4.

Study Abroad Certificate in Textile Engineering - Fall

Module: Digital Construction 2

Key facts

Workload	ECTS	
60 h	2	
Parts of the module	Contact time	Self-study time
	20 h	40 h
Module leader	Assessment	
Prof. Dr. Christian Kaiser	Homework assignment	

Curriculum Outline

Students have integrated professional knowledge in the field of activity of patternmaking. This also includes in-depth specialised theoretical knowledge. They know the scope and limits of the learning areas of construction in the clothing industry, construction systems, body measurements, construction measurements, working out production patterns with seam allowances, labelling, markings and drill holes, markings and drill holes, construction of geometric bodies, complex product development on the PC, virtual sewing processes.

Key content

- Introduction to the virtual sewing process (3D software)
- Simulation of pleats
- Basics of digital fit assessment
- Basics of 3D visualisation including rendering
- Development of simulation details for photorealistic requirements
- Realisation of your own 3D work piece from pattern creation to rendering

Study Abroad Certificate in Textile Engineering - Fall

Module: Textile Ecology and Sustainability

Key facts

Workload	ECTS	
90 h	3	
Parts of the module	Contact time	Self-study time
	30 h	60 h
Module leader	Assessment	
Prof. Matthias Kimmerle	Written Exam (60 minutes)	

Curriculum Outline

In the lecture, we examine and elaborate possible strategies for textile and clothing companies, how to setup an efficient working CSR team. We compare certification facilities and best available technologies within the complete global textile supply chain. From the idea, through efficient product development processes of garments and textile products, social and sustainable production processes and facilities, logistics to the retail and end of use of the products, we try to leave as little as possible footprint.

Key content

- Case Studies, Eco labels, Textile Alliances, Green
- Technologies, Restricted Substance lists, EMAS, GRI,
- GOTS, Bluesign, Ökotex, Fair Wear Foundation,
- SA8000, Carbon Footprint, Textile Exchange,

Study Abroad Certificate in Textile Engineering - Fall

Module: Circular Economy

Key facts

Workload	ECTS	
90 h	3	
Parts of the module	Contact time	Self-study time
	30 h	60 h
Module leader	Assessment	
Ms. Vivian Holzschuh	Written exam (60 minutes)	

Curriculum Outline

Students have a broad and integrated knowledge including the scientific foundations of the circular economy with regard to political, legislative, ecological, economic and social aspects. They acquire a well-founded and practical insight into operational processes.

Key content

- Introduction to the circular economy
- Society and circular economy (transition from linear to circular economy, ecological awareness, co-creation)
- Political objectives
- Legislation (e.g. Circular Economy Act, waste legislation)
- Sustainable product development in a circular economy (types of cycles, design principles, product development phases), principles, phases of product development)
- Business models in a circular economy

Study Abroad Certificate in Textile Engineering - Fall

Module: Social Aspects and Ethics

Key facts

Workload	ECTS	
60 h	2	
Parts of the module	Contact time	Self-study time
	30 h	30 h
Module leader	Assessment	
Prof. Marina Baum	Homework Assignment	

Curriculum Outline

The students have integrated specialist knowledge in the area of responsible ethical behaviour. This also includes in-depth theoretical knowledge of the fundamentals of ethics. They are familiar with the scope and limits of national and international guidelines for morally appropriate behaviour.

Key content

In this course, the basics of ethics (such as guidelines for morally appropriate behaviour, law, justice, basic needs and human rights) are presented. The foundations are based, among other things, on the 17 UN sustainability goals of Agenda 2030.

In the further course, a current ethical problem from industry or society is critically discussed and a possible course of action is outlined. Sustainability is seen as the guiding principle for ethical behaviour. A distinction is made between three dimensions: the ecological (conservation of natural resources), the economic (sustainable economic (sustainable economy) and the social (fair distribution between individuals and generations and the further development of solidarity principles).

The following areas can be dealt with here:

- Technology ethics (ethics of action with reference to new technological developments e.g. Industry 4.0, Internet of Things, Big Data, AI, e-mobility, etc.)
- Labour ethics (work in transition: modern slavery, fair trade)
- Business ethics (justice and social responsibility)

Study Abroad Certificate in Textile Engineering - Fall

Module: Industry-related project

Key facts

Workload	ECTS	
360 h	12	
Parts of the module	Contact time	Self-study time
	120 h	240 h
Module leader	Assessment	
Prof. M. Bräuning	Homework assignment + Presentation,	

Curriculum Outline

Students work independently and intensively on a problem set by a project partner (from a company or institute in the textile and clothing industry) and develop solutions that are prepared, documented and presented in a scientifically sound manner. You will familiarise yourself with the tools of project management and apply them to your project. You will develop a deep understanding of the challenges and potential of team and project work.

You will also be able to transfer experience and solutions from this completed project to other projects and tasks.

Key content

- Independent processing of a project task on topics from the areas of product development, research, quality management or a company-specific focus.
- Kick-off event with presentation of the framework conditions, important dates and expectations of the students, as well as formation of groups.
- Lecture on topics relevant to the project and project management.
- Independent planning of the project and development of a project plan with defined milestones.
- Independent work on the project (research, practical development of the project idea, creation of a product and documentation).
- The project work is documented in a scientific paper (printed and digital) and the results are presented in a final public presentation.

Study Abroad Certificate in Textile Engineering - Fall

Module: Clothing Physiology

Key facts

Workload	ECTS	
90 h	3	
Parts of the module	Contact time	Self-study time
	30 h	60 h
Module leader	Assessment	
Prof. Dr. Christian Kaiser	Written test and presentation	

Curriculum Outline

The first learning objective is to get to know the exciting laws of clothing physiology, to understand and apply them.

This includes the thermo regulation of the human body in the interplay of different climates (ambient climate) taking into account the current performance turnover of humans.

The textile shell plays an important role as a second skin or even layer system, whether with fashion, sports or functional outdoor clothing and equipment. In addition, we will treat topics on cutting construction, special processing technologies (waterproof, flipping bridges, etc.), test standards and the selection of functional materials from ecological aspects.

The lecture is divided into a theoretical and practical part.

You will learn to analyze and improve existing current clothing systems.

Key content

- Thermoregulation of human body
- Impact of manufacturing methods
- Testing norms
- Functional textiles
- Material properties
- Construction properties, yarn and fabrics
- Impact of breathability vs. windproofness
- Level of waterproofness
- Different insulation levels

Study Abroad Certificate in Textile Engineering - Fall

Module: Smart Textiles

Key facts

Workload	ECTS	
60 h	2	
Parts of the module	Contact time	Self-study time
	20 h	40 h
Module leader	Assessment	
Prof. Manuela Bräuning	Project documentation + presentation	

Curriculum Outline

Students are familiar with the challenges of the future market of smart textiles and can categorize their knowledge in terms of scope and depth in the field of knowledge. They are able to contribute to the development of products in this field.

Key content

The future field of smart textiles is at the core of this subject. In addition to market research, design, conception and development, the aim is also to realize a prototype product and market it. This is achieved through independent work in the form of a project and is rounded off with creativity techniques and an excursus on marketing and sustainability. There will be regular dialogue and collaboration with fellow students and supervisors. In addition, the work is scientifically documented and presented.