Hochschule
Albstadt-Sigmaringen
Albstadt Sigmaringen University

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
Quality Management 1	2
Industry-related project	12
Knit Pattern Development	2,5
Smart Textiles	2,5

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**	
Mr. Kai Nebel	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. Vivien 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: Quality Management 1

Key facts

Workload		**ECTS**
60 h		2
Parts of the module	**Contact time**	**Self-study time**
	30 h	30 h
Module leader	**Assessment**	
Prof. Sven Gerhards	Written exam	

Curriculum Outline

The students have integrated specialist knowledge in the area of multichannel retail, supply chain in clothing industry as well as product development in retail.

Key content

At the end of the semester, students will

- know the steps of product development in retail and online shops.
- understand the influence of methods/tools of quality management to the process of product development.
- apply the QM-tools and transfer the contents to the process of product development.
- analyze which QM-tool gains better results for several products / retails.
- discuss in group work several QM-tools and work out complete forms.
- present the result of the group work to the other students.

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: Knit Pattern Development

Key facts

Workload		**ECTS**
75 h		2,5
Parts of the module	**Contact time**	**Self-study time**
	30 h	45 h
Module leader	**Assessment**	
Prof. Marina Baum	Graded laboratory work	

Curriculum Outline

Students will have broad and integrated knowledge including the scientific principles, the practical application of pattern development in circular knitting and a critical understanding of the most important methods for designing and producing circular knitwear.
Students have a very broad spectrum of specialized cognitive and practical skills. They are able to plan work processes across the board. They can design, program and produce circular knitting patterns. They can define the appropriate knitting machine and the knitting weave for the production specific circular knitted fabrics.
Students are able to present complex interdisciplinary issues in a structured, targeted and addressee-oriented manner in laboratory work and take the interests and needs of addressees into account in a forward-looking manner.
Students can independently and sustainably design learning and work processes.

Key content

- Development and production of knitting patterns (colour jacquard and structure) for a small jacquard circular knitting machine
- Inspiration and idea generation - Trend research - Technical documentation
- In-depth knowledge of circular knitting technology, especially with regard to the pattern possibilities of the machines
- Documentation of pattern development and knitting production as well as knowledge of the pattern possibilities of circular knitting machines

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.