Textile Innovations
Sustainable.Digital.Individual.

Warp to Wear

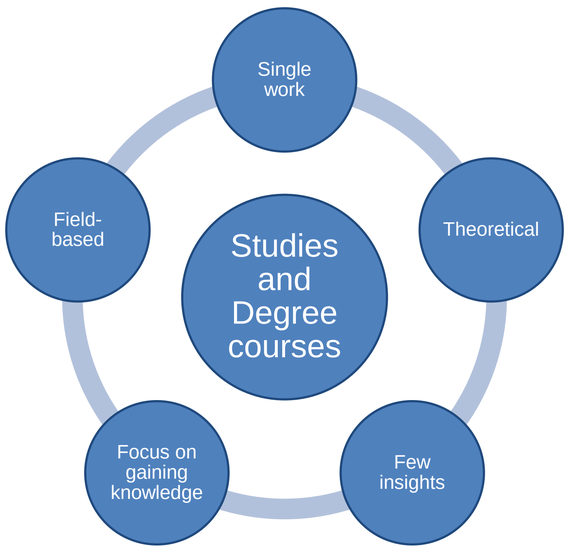
ITA Institut für Textiltechnik und Lehrstuhl für Textilmaschinenbau | RWTH AACHEN UNIVERSITY

From Warp to Wear: Fundamentals to Advanced Textile Design

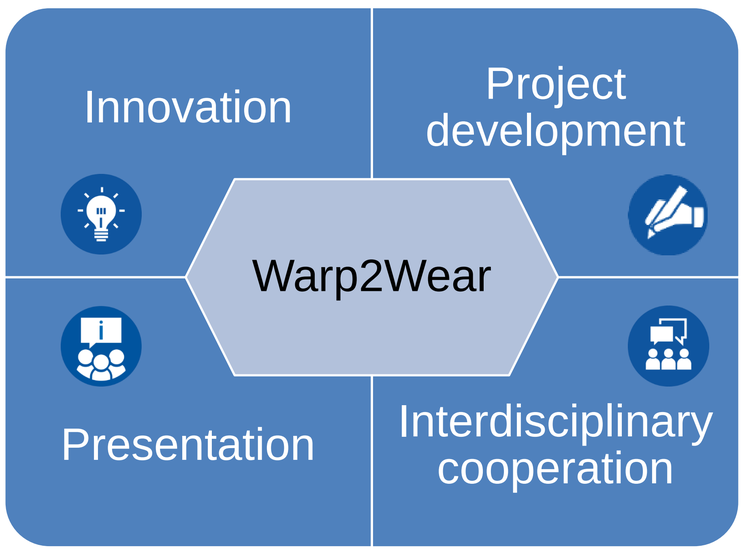
Mission Statement

The goal of the Warp2Wear experience is to bridge this gap in knowledge between engineering and design by utilising hands-on technique to encourage the students to use their creativity, skills and gained knowledge to develop increasingly complex textile structures, culminating in a final collaborative project of their choosing. The students will gain information from a designer‘s background and in technical textiles to expand their knowledge base in the field of technical textile applications by giving them a hands-on learning experience utilising the machine park and rapid prototyping centre at Institut für Textiltechnik RWTH Aachen. To accomplish this, a curriculum will be developed with a focus on woven structures, which will include an overview of fabric structures, fabric deconstruction, designing woven structures for an end use, tailoring techniques, intro into multi-layered woven structures, and intro into 3d woven textile structure. Throughout the course, time will be set aside for each student to present their work in order to achieve an opener and more collaborative development experience. By including this classic design salon approach to this course, the hope is to not only bring the individuals together to further increase their understanding of the design process, fabric structure and curriculum but also to give a chance to practice accepting and giving feedback and experience a more interactive work experience.

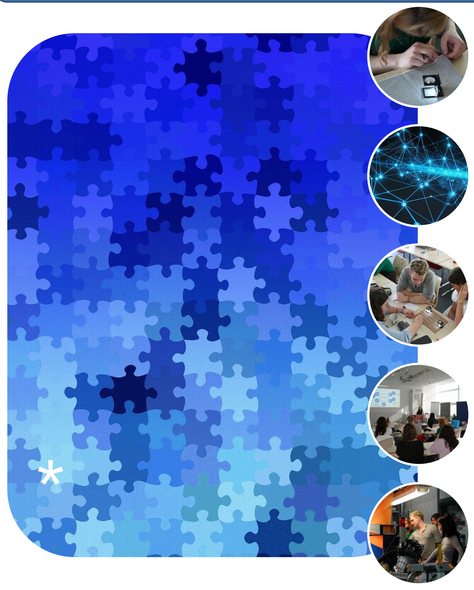
Problem



Goals



Benefits



- Learning new skills
- Expanding the network*
- Exploring project development in teams
- Introduction to new fields
- Gaining hands-on experience

Project Ideas and Innovations

Mono-material Shoe



- Entirely made from PET
- Fully customizable
- Easily adjustable
- 100% recyclable
- Designed for sustainability

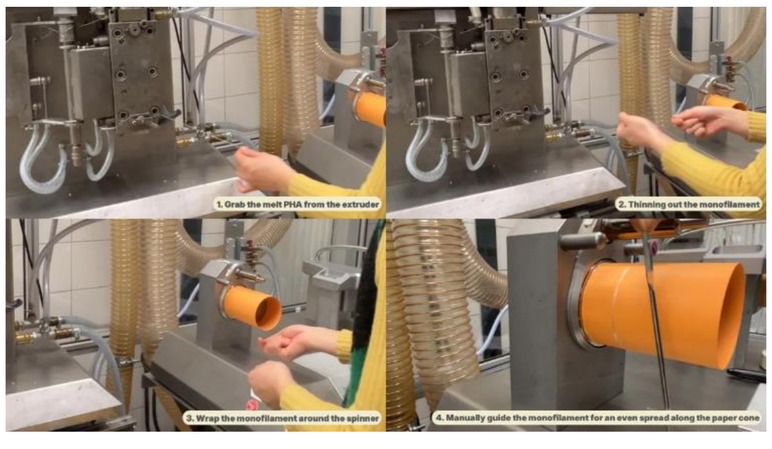
- Exploration of manufacturing processes
  - Warp knitting spacer fabrics
  - 3D-printing on textiles
  - Thermoforming

Biobased and biodegradable lingerie

- Exploration of biobased and biodegradable fibres
  - PLA
  - PHA/PHB
- Research into degradability standards
  - TÜV Austria
  - USDA
- Contact with manufacturers for sourcing PHA/PHB

Spin-Off project:

- *Exploration of producing and spinning PHA fibres*
  - Melt spinning PHA (Polyhydroxyalkanoates) on a laboratory scale
  - Carding and spinning the fibres by hand
  - Weaving by hand to test the workability

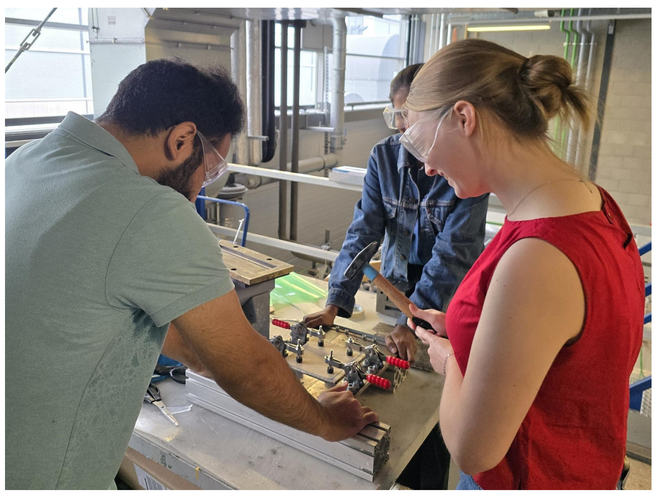




Knitted Natural Fiber Composites



- Exploring knitted textiles in composites
- Natural fibres in composites
  - Flax
  - Hemp
  - Wool
  - Cotton
- Stress testing knitted vs. woven textiles in composites



Stiftung Innovation in der Hochschullehre

ITA Group International Centre for Sustainable Textiles

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* Photos by pixabay

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