Work Placement – Skills and Competencies

Overview

Across two years, students develop a comprehensive understanding of textile and apparel technologies, sustainability principles, and industry-standard practices. The curriculum progresses from foundational fibre and fabric knowledge to advanced manufacturing, quality control, and sustainable innovation – preparing graduates for roles in technical textiles, fashion, and global supply chains. After completing their Work Placement, students will move into Year 3 and begin their Final Year Project. This stage may provide opportunities to collaborate directly with the industrial partner.

Year 1: Foundations for Industry

Core Knowledge

- Fibre science: composition, properties, and sustainability.
- Textile manufacturing chain: fibres, yarns, fabrics, coloration, finishing.
- Yarn and fabric technologies: woven, knitted structures.
- Sustainable fashion systems and circular economy principles.

Skills Developed

- Material analysis and technical problem-solving.
- Analytical thinking linking fibre properties to product performance.
- Team collaboration and technical communication.
- Research and innovation for sustainable solutions.

Industrial Relevance: Students can

- Optimise fibre and yarn selection for performance and sustainability.
- Contribute to eco-friendly textile innovations.
- Support quality control and process improvement in manufacturing.

Year 2: Advanced Technical & Professional Expertise

Core Knowledge

- **Textile Coloration & Finishing:** Preparation, dyeing, finishing, and sustainability innovations.
- **Performance Evaluation & Quality Control:** Testing, compliance, Six Sigma, Lean methodologies.
- **Garment Manufacturing:** Lifecycle analysis, cost-quality trade-offs, ethical decision-making.
- **Advanced Fabric Manufacturing:** Complex woven/knitted structures, digital tools, sustainable technologies.

Skills Developed

- Advanced technical competence in coloration, finishing, and garment production.
- Quality assurance and performance testing aligned with global standards.
- Digital proficiency for textile specification and design.
- Professional reporting and supply chain communication.
- Research and innovation for sustainable manufacturing.

Industrial Relevance: Students can

- Implement sustainable coloration and finishing processes.
- Apply quality control systems across textile and apparel supply chains.
- Drive innovation in garment and advanced fabric technologies.
- Contribute to circular economy strategies and responsible production.

Year 3: Advanced Technical & Professional Expertise (under development)

Core Knowledge

- **Nonwoven Products and Processes:** nanowovens, their market, technologies, and sustainability innovations.
- **Technical and Innovative Textiles:** Technical textiles, function and performance.
- **Textile Product Innovation, Design and Development:** concepts of textile product innovation and design.
- **Research Project:** Independent experimental study within the space of textile and fashion industry.

Progression & Industry Alignment

Year	Focus	Industry Relevance
Year 1	Foundations in fibres, yarns, fabrics, sustainability	Prepares students for entry-level roles in material selection, process optimisation, and sustainable design
Year 2	Advanced manufacturing, quality control, digital tools	Equips students for technical, managerial, and R&D roles in global textile and fashion industries

Outcome: Graduates possess a unique blend of technical expertise, sustainability awareness, and professional skills, meeting industry demands for innovation, compliance, and environmental responsibility.

Summary – Year 1 Expertise and Industry Relevance

Overview

Year 1 equips students with foundational knowledge and practical skills essential for careers in the textile and apparel industries. The curriculum emphasises fibre science, manufacturing technologies, sustainability, and innovation, addressing global challenges such as resource efficiency, circular economy, and eco-friendly production.

Core Knowledge Areas

- **Textile Fibres (TEXT1360)**
  - Composition, structure, and properties of natural and man-made fibres.
  - Industrial fibre production processes and performance implications.
  - Sustainability strategies: carbon footprint, recycling, and circular economy.
  - Innovation in sustainable textiles and advanced materials.
- **Sustainable Textile Manufacturing & Industry (TEXT1355)**
  - Complete textile supply chain: fibres, yarns, fabrics, coloration, finishing, apparel.
  - Global business models and sustainability interventions.
  - Analytical and academic skills for industry-focused problem-solving.
- **Yarn Manufacturing (TEXT1351)**
  - Staple and filament yarn technologies, structure-property relationships.
  - Quality assessment and sustainability in yarn production.
  - Technical problem-solving and process optimization.
- **Fundamentals of Fabric Manufacturing (TEXT1345)**
  - Principles of woven and knitted fabric formation using manual and digital methods.
  - Evaluation of sustainability and commercial factors in production.
  - Technical communication and reflective analysis.
- **Sustainable Fashion (DESN1248)**
  - Environmental and ethical challenges in global fashion systems.
  - Stakeholder roles and strategies for sustainable practices.
  - Critical thinking on systemic sustainability issues.

Skills Developed

- **Technical Expertise:** Fibre and yarn analysis, fabric formation, quality control.
- **Problem-Solving:** Addressing manufacturing and sustainability challenges.
- **Analytical Thinking:** Linking material properties to product performance.
- **Collaboration & Communication:** Team projects simulating industrial environments.
- **Research & Innovation:** Exploring sustainable technologies and circular solutions.

Industrial Relevance

Students from Year 1 are prepared to:

- Optimize material selection for performance and sustainability.
- Contribute to eco-friendly innovations in textiles and fashion.
- Support process improvement and quality assurance in manufacturing.
- Engage with global supply chain strategies and circular economy initiatives.

Outcome: Students gain a holistic understanding of textile production and sustainability, aligning with industry needs for responsible manufacturing and innovation.

Industrial Sector Summary – Year 2 Expertise and Industry Relevance

Overview

Year 2 builds on foundational knowledge from Year 1, advancing students' technical, analytical, and sustainability-focused skills across textile processing, quality assurance, garment manufacturing, and advanced fabric technologies. The curriculum emphasizes innovation, environmental responsibility, and industry-standard methodologies, preparing students for leadership roles in textile and apparel sectors.

Core Knowledge Areas

- **Textile Coloration & Finishing (DESN2004)**
  - Preparation, coloration, and finishing processes for performance and aesthetics.
  - Sustainability challenges and emerging eco-friendly technologies.
  - Decision-making for technical problem-solving with environmental considerations.
- **Performance Evaluation & Quality Control (DESN2002)**
  - Specialist knowledge of textile performance and compliance.
  - Testing methods for fibres, yarns, fabrics, and garments.
  - Application of Six Sigma, Lean, and Total Quality Control principles.
- **Garment Manufacturing (DESN2001)**
  - Apparel production lifecycle and cost-quality trade-offs.
  - Sustainable manufacturing strategies and ethical decision-making.
  - Analysis of environmental and social impacts in fashion production.
- **Advanced Fabric Manufacturing (DESN2016)**
  - Complex woven and knitted structures and technologies.
  - Digital tools for textile specification and commercial production.
  - Innovations for sustainable textile manufacturing.

Skills Developed

- **Technical Expertise:** Advanced knowledge of coloration, finishing, fabric and garment manufacturing.
- **Quality Assurance:** Performance evaluation, compliance testing, and process optimization.
- **Analytical Thinking:** Data-driven decision-making for sustainability and efficiency.
- **Digital Competence:** Use of digital tools for textile design and specification.
- **Professional Communication:** Reporting and presenting technical solutions in industry contexts.
- **Research & Innovation:** Exploring emerging technologies for sustainable production.

Industrial Relevance

Students from Year 2 are equipped to:

- Optimise coloration and finishing processes for performance and sustainability.
- Implement quality control systems across textile and apparel supply chains.
- Drive innovation in garment manufacturing and advanced fabric technologies.
- Contribute to circular economy strategies and responsible production practices.

Outcome: Students gain specialist knowledge and practical skills aligned with industry priorities: sustainability, compliance, and technological innovation, preparing them for roles in product development, process engineering, and supply chain management.