



# Modulhandbuch

zur Reakkreditierung

des Bachelorstudienganges

Textile and Clothing Management

# Inhaltsverzeichnis

TCM-10: Scientific Working and Study Tools	4
TCM-20: Textile Materials	6
TCM-30: Basics of Textiles	10
TCM-40: Mathematics	15
TCM-50: Natural Sciences	17
TCM-60: Information Technology	20
TCM-70: Business Sciences	24
TCM-80: Textile Technologies	28
TCM-90: Communication and Teamwork	34
TCM-100: Basics of Clothing	38
TCM-110: Textile Chain	44
TCM-120: Accounting	47
TCM-130: Law	51
TCM-140: Quality	54
TCM-150: Guided Projects	57
TCM-160: Textile Production	59
TCM-170: Sustainability	63
TCM-180: Finishing	67
TCM-190: Projects	69
TCM-200: Study Work	71
TCM-210: Electives	73
TCM-220: Finalizing Seminars	75
TCM-390: Internship Semester or Semester Abroad	78
TCM-230: Marketing	80
TCM-240: Printing	83
TCM-250: Supply Chain Management	85
TCM-260: Human Resources Management	88
TCM-270: Ergonomics	90
TCM-280: Organisation and Controlling	92
TCM-290: Production Engineering	96
TCM-300: Advanced Product Engineering	100

TCM-310: Clothing Production	104
TCM-320: Clothing Construction	107
TCM-330: Product Planning	110
TCM-340: Technical Textiles	114
TCM-350: Fabric Production	117
TCM-360: Textile Products	120
TCM-370: Design Theory	123
TCM-380: Fashion Design	129

Modul **TCM-10: Scientific Working and Study Tools**

Sprache Englisch  
Verantwortlich Prof. Dr. Christof Breckenfelder  
Arbeitsbelastung SWS 2 ECTS 2  
30h Präsenz  
13h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
7h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Scientific Working and Study Tools	2	2	0	0	0	2	1
Lehrende/r:	Prof. Dr. Breckenfelder, Christof							
Voraussetzung:								

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-10	Scientific Working and Study Tools	T	Testat

Anmerkung

## Übergreifende Modulziele

The Study Startphase will enable students in a systematic order, to deal with the transition between school and academic studies organizationally as well as in terms of content. Thus, in particular the process of self-assessment is strengthened by the students. In this way specific deficits should be identified, competencies should be strengthened and further targeted learning opportunities provided.

The students are able to evaluate their competence with regard to the scientific use of digital media. They can select literature and obtain accurately. Students can plan their study time effectively and optimally prepare for lectures and seminars. The first use of learning techniques can be reached.

Scientific texts in their formal system can be generated by the students and presented in the form of smaller Word reports and integrated data formats.

In addition, students gain a thorough orientation in bachelor affairs and relevant organizational questions, to log on, such as, for example, examinations.

## Scientific Working and Study Tools

### Inhalte

Various lectures and courses offer students knowledge and skills required especially already in the initial phase of a study course. This includes especially hints to organize the study course, prepare for examination and improve writing skills and scientific working.

Part of the course is done in groups of app. 20 students.

### Literatur

Modul **TCM-20: Textile Materials**

Sprache Englisch

Verantwortlich Prof. Dr. Yordan Kyosev

Arbeitsbelastung SWS 4 ECTS 5

60h Präsenz

43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)

22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Textile Materials	2	3	2	0	0	0	1
Lehrende/r:	Prof. Dr. Kyosev, Yordan							
Voraussetzung:								
Bezeichnung:	Practical Training Textile Materials	2	2	0	0	0	2	1
Lehrende/r:	Prof. Dr. Kyosev, Yordan							
Voraussetzung:								

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-21	Textile Materials	Pr	Klausur
TCM-22	Practical Training Textile Materials	T	Testat

Anmerkung

## Übergreifende Modulziele

The students know the main properties of the textile fibers as fiber length, fineness, strength, moisture absorption, UV stability and other specific properties. They are able to select the suitable fiber for certain application areas for clothing and general technical applications. For the situations, where one fiber is not sufficient, the students can select appropriate combinations for fiber blends.

The students understand the production processes (wet, dry and melt spinning, for the natural fibers - the steps from harvesting to sliver production) for the textile fibers and are able to define the places and parameters, where the properties of the fibers can be influenced.

Practically the students are capable to perform microscopical analysis of single fibers and fiber blends and based on burning test, longitudinal view and cross section and solution schema of Dr. Strattmann they are able to identify the fiber types which are analyzed.

## Textile Materials

### Inhalte

Production, chemical and physical structure, common properties and application areas of natural and chemical fibers and their blends:

- Cotton, flax, wool, silk and other natural fibers
- Regenerated cellulose fibers - viskose, cupro, acetate and triacetate, lyocel, modal
- Polyester, polyamid, polypropylen, polyacrylnitril, aramid, natural and synthetic rubber, elastane, carbon, glass, basalt

Aspekts for the separated topics:

- Relation between properties, quality and production process / harvesting conditions, moisture absorption
- Polymerisation, polycondensation, polyaddition, degree of polymerisation, crystalline and amorphous areas
- Hydrogen bonds, covalent and ionic bonds
- Mercerizing of cotton, carbonisation of wool, degumming of silk, vulcanisation of natural rubber, sulfid bonds
- Shrinkage and heat setting, texturizing, high volume yarns
- Wet and dry spinning , melt spinning
- Social, enviromental and animal protection aspects as water consumption, organic cotton, genetic modification, pesticides, human rights and children work, mulesing for wool
- Textile labeling (European regulations)

### Literatur

Kyosev, Y., Textile Materials - Skript

Learning contents on the online platform Moodle

E. Wagner, Die Textilien Rohstoffe, Dr. Spohr-Verlag/Deutscher Fachverlag, 6. Auflage, 1981

A. Schenek, Naturfaser-Lexikon, Deutscher Fachverlag 2000

A. Nakamura, Fiber Science and Technology, Science Publisher 2000

W. Bobeth: Textile Faserstoffe, Springer-Verlag, 1993,

E. H. Schiecke, Wolle als textiler Rohstoff, Schiele & Schön, 1979

H. Doehner, H. Reumuth, Wollkunde, Paul Parey, Berlin 1964

W.S. Simpson, G.H. Crawshaw, Wool: Science and Technology

D. Cottle, Australian Sheep and Wool Handbook, Inkata Press, Melbourne 1991

Ch. Brebeck, Kommentar zum Textilkennzeichnungsgesetz, Deutscher Fachverlag, 1986

Fasertafeln, aus Journal Chemical Fibers

B.v. Falkai, Synthesefasern, Verlag Chemie, 1981

F. Fourné, Synthetische Fasern, Hanser Verlag 1995

Z.A. Rogowin, Chemiefasern, Georg Thieme Verlag 1982

J. Svedova, Industrial Textiles, Elsevier Verlag 1990

E. Sjöström, R. Alén, Analytical Methods in Wood Chemistry, Pulping and Papermaking, Springer 1999

H. Batzer, Polymere Werkstoffe Bd I-III, Thieme Verlag 1984

G. Schnelgesberg, Das Faserhandbuch, Deutscher Fachverlag 1999

H.L. Needles, Textile Fibers, Dyes, Finishes and Processes, Noyes Publication 1986

M. Stratmann, Erkennen und Identifizieren der Faserstoffe Spohr-Verlag 1973



## Practical Training Textile Materials

### Inhalte

During the Practical Training Textile Materials the students investigate common used fibers with microscopes and learn to identify the fibers and their blends. The students prepare cross-sectional and longitudinal views of the fibers and analyse them using solutions according to the scheme of Stratmann.

Investigated are:

- cotton, raw and mercerized
- linen
- silk, normal and degummed
- wool
- viscose (Rayon)
- Cupro
- acetate und triacetate
- Lyocel
- Modal
- polyester
- polyamide
- polyacrylonitrile

A sample of polypropylene, aramid, natural and synthetic rubber, elastane, carbon, glass, basalt.  
Analysis of one unknown fiber and a blend of two unknown fibers.

### Literatur

Learning contents on the online platform Moodle

M. Stratmann, Erkennen und Identifizieren der Faserstoffe Spohr-Verlag 1973

Modul **TCM-30: Basics of Textiles**

Sprache Englisch  
Verantwortlich Prof. Dr. Alexander Büsgen  
Arbeitsbelastung SWS 4 ECTS 5  
60h Präsenz  
43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Yarn Technology	2	3	2	0	0	0	1
Lehrende/r:	Prof. Dr. Weide, Thomas							
Voraussetzung:	none							
Bezeichnung:	Fabric Technology	2	2	2	0	0	0	1
Lehrende/r:	Prof. Dr. Büsgen, Alexander							
Voraussetzung:								

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-30	Basics of Textiles	Pr	Klausur

Anmerkung

## Übergreifende Modulziele

Basics of Textiles serves right at the beginning of textile studies as an introduction to basic textile technologies. Yarn and fabric technologies impart basic knowledges about about textile raw materials, production methods and machines and physical properties thereof. Students know and can explain all steps and most important variations of the textile chain from making a yarn until the creation of fabrics.

Students are able to call necessary working steps of producing and processing of textiles. They are able to list the different manufacturing and processing methods and they can select a suitable process for a given task and defined requirements of textiles. Furthermore, they are able to motivate, how properties and processing of textiles are changing by different raw materials, production methods and combinations. Students can calculate count, draw, productivity performance and twist.

Students can analyze fabrics (which basic elements having which orientation are connected in which way). Based on the analysis and the recognized structure, students are able to deduce important physical properties of fabrics. They can compare and interpret mechanical properties of different fabrics e.g. by analysis of stress strain test results. Students have well-grounded understanding about individual application areas and markets of fabrics.

# Yarn Technology

## Inhalte

### History of Spinning

#### Filament Yarns

- Spinning
- Texturising
- Determinations

#### Differences in Staple Fiber Productions

- Short Stapel Spinning
- Long Staple Spinning (Worsted Spinning, Half Worsted Spinning, Carded Wool Spinning)

#### Processes of Staple Fiber Spinning

- Blowroom
- Carding
- Drawing
- Combing
- Roving Production
- Spinning Processes (Ring-, Rotor-, Airjet-Spinning)
- Spulen

#### Calculations in Spinning

- Yarn Fineness
- Drafts
- Fibers in Yarn Cross Section
- Yarn Twist

## Literatur

### The Rieter Manual of Spinning (Werner Klein)

- Volume 1: Technology of Short-staple Spinning - Volume 2: Blowroom & Carding
- Volume 3: Spinning Preparation
- Volume 4: Ring Spinning
- Volume 5: Rotor Spinning
- Volume 6: Alternative Spinning Systems
- Volume 7: Processing of Man-Made Fibres

# Fabric Technology

## Inhalte

### 1. Introduction:

- Definition of "textile" und "fabric", classification of fabrics, fabric analysis procedure, meaning of fabric analysis

### 2. Woven fabrics:

- summary of common weaving and weaving preparation processes
- Introduction to basic weaves and to weave diagrams
- composition and structure of woven fabrics
- properties of woven fabrics (wear resistance, E-modulus, anisotropic character of properties)
- special weaving processes (leno fabrics, terry fabrics, corduroy, double plush fabrics, gripper axminster, gobelins/tapisserie)

### 3. Knittings:

- summary of weft knitting and warp knitting processes
- stitch formation, patterns and patterning elements (stitch, tuck, floating, filling thread)
- needle types (bearded, latch and compound needles)
- properties and stitch arrangement of jersey, double jersey and purl knitting
- composition and structure of knittings
- properties of knittings and applications

### 4. Non-wovens:

- summary of web formation processes (mechanical, aerodynamical, hydrodynamical web formation and spunlaying)
- summary of web bonding processes (felted, needle punching, spunlacing, chemical bonding and thermal bonding)
- composition and structure of non-wovens
- properties and applications

### 5. Stitch-bondings

- invention and history of stitch-bondings,
- summary of selected stitch-bonding processes (Malimo, Maliwatt, Malivlies, Kunit, Mulktiknit), composition and structure of stitch - bondings
- properties and applications

### 6. Narrow woven fabrics

- summary of manufacturing methods (traditional shuttle loom, modern needle loom)
- weft insertion principle and fabric character of needle loom fabrics
- selvage formation with and without auxiliary threads
- applications of narrow woven fabrics

### 7. Braids

- summary of braiding processes,
- composition and structure of braided fabrics
- difference between lace and cord braiding machines
- function and task of horn gears and of carriers
- properties and applications of braids

### 8. Tuftings

- history of tuftings, reinvention and first industrial mass production
- basic manufacturing processes

- composition and structure of tuftings
- classification and important variations, current application

#### 9. Bobinets/Tulle

- variations and classification of bobinets,
- summary of bobinet manufacturing processes,
- composition and structure of bobinets,
- properties and current applications of bobinets and tulle,
- difference between genuine bobinets and warp knitted "tulle" fabrics

#### 10. Miscellaneous fabrics

- summary of miscellaneous fabrics (nets, scrim, flocked fabrics),
- composition and structure of miscellaneous fabrics, properties and applications

### Literatur

- Prabir Kumar Banerjee: Principles of fabric formation, CRC press, Boca Raton-London-New York 2015
- Eberle et. al. : Clothing Technology, Verlag Europa Lehrmittel, Haan-Gruiten 1999
- Ullman's Encyclopedia of Industrial Chemistry, VCH Verlagsgesellschaft, Weinheim 1995
- Osterloh, M.: Weaving, Chap. 3 pp. 567-578, Büsgen, A.: Braiding, Chap. 3 pp. 579-585, Weber, K.-P.: Knitting, Chap. 3 pp. 585-604
- Kadolph, S.J.: The use of knitted, woven and nonwoven fabrics in interior textiles, in: Rowe, T. (ed.): interior textiles, Woodhead Publishing in Textiles No. 92, Woodhead Publ./CRC Press, 2009
- Lord, P.R., Mohamed, M. H.: Weaving: conversion of yarn to fabric, Merrow Publ. Co., Durham/ England, 1992 (reprint)
- Spencer, David: Knitting Technology, Woodhead Publishing Ltd., 3<sup>rd</sup> edition, Cambridge 2001
- Albrecht, W.; Fuchs, H.; Kittelmann, W. (ed.): Nonwoven Fabrics - Raw Materials, Manufacture, Applications, Characteristic, Testing Process, Wiley-VCH Verlag, Weinheim 2000
- Kyosev, Y.: Braiding technology for textiles - principles, design and processes, Woodhead Publishing Series in Textiles, Elsevier, 2014
- Crawshaw, G.: Carpet Manufacture, Published by Wronz Developments, Christchurch, New Zealand, 2002
- Tortora, Phyllis G. (editor): Fairchild's Dictionary of Textiles, 7<sup>th</sup> edition, Fairchild Publications, New York 2000, isbn 1-87005-707-3
- Büsgen, A.: Terms of fabric technology (dictionary), Intranet, Faculty of Textile and Clothing/ Niederrhein University,
- Transfer\_Dozenten/Buesgen/fabric technology/english\_german.xls
- Transfer\_Dozenten/Buesgen/fabric technology/deutsch\_englisch.xls

**Modul TCM-40: Mathematics**

Sprache Englisch  
Verantwortlich Prof. Dr. Rudolf Voller  
Arbeitsbelastung SWS 4 ECTS 5  
60h Präsenz  
43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
22h Prüfungsvorbereitung

**Lehrveranstaltungen**

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Business Mathematics	4	5	2	0	2	0	1
Lehrende/r:	Prof. Dr. Voller, Rudolf							
Voraussetzung:	Schulmathematik bis Klasse 12 (Fachabitur), English Language Level CEF B2							

**Prüfungen**

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-40	Business Mathematics	Pr	Klausur

**Anmerkung**

## Übergreifende Modulziele

In this module the knowledge in mathematics is updated, such that the students know about the basics in vector analysis and analysis at all. They are able to apply this to textile and clothing specific applications as well as to economic problems. Furthermore they can model and solve linear optimization problems.

## Business Mathematics

### Inhalte

Set Theory, Sets of Numbers

Sequences, Limits

- Arithmetic and geometric sequences and series

- Applications in financial mathematics (Interests, Depreciation)

Functions of one variable

- Zeros of polynomials, Horner's scheme

- Exponential function and Logarithm

- Net present value, Future value, Annuity, Amortization

- Trigonometric Functions

Vector Analysis and Matrix calculation

Linear Programming

Differential and Integral Calculus

Application of differential and integral calculus in economics

### Literatur

Dadkhah, K.: Foundations of Mathematical and Computational Economics

Antony Croft, Robert Davidson: Mathematics for Engineers, Prentice Hall,

[http://www.maths.gla.ac.uk/~kal/FINMATH\\_LECT.pdf](http://www.maths.gla.ac.uk/~kal/FINMATH_LECT.pdf)



Modul **TCM-50: Natural Sciences**

Sprache Englisch  
 Verantwortlich Prof. Dr. Boris Mahltig  
 Arbeitsbelastung SWS 6 ECTS 6  
 90h Präsenz  
 40h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
 20h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	General Chemistry	2	2	2	0	0	0	1
Lehrende/r:	Prof. Dr. Mahltig, Boris							
Voraussetzung:	School knowledge in physics and chemistry; advanced technical college entrance qualification in mathematics, chemistry and physics							
Bezeichnung:	Organic Chemistry	2	2	2	0	0	0	2
Lehrende/r:	Prof. Dr. Mahltig, Boris							
Voraussetzung:	School knowledge in physics and chemistry; advanced technical college entrance qualification in mathematics, chemistry and physics							
Bezeichnung:	Physics	2	2	1	0	0	1	1
Lehrende/r:	Prof. Dr. Breckenfelder, Christof							
Voraussetzung:	Advanced technical college entrance qualification in mathematics and physics							

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-51	Chemistry	Pr	Klausur
TCM-52	Physics	T	Testat

Anmerkung

## Übergreifende Modulziele

A broad knowledge in natural sciences are absolutely necessary for generalists working in the area of textile- and clothing technology. The students gain broad knowledge necessary for understanding of technology- and economic-related lectures. The knowledge in natural science will be equalized to a level, which is necessary to understand textile technology and to evaluate processes in that field.

With physics the students enter the fundamentals of a scientific technical knowledge horizon, which at the same time enables them to judge physical concepts and to be able to choose for their own textile oriented tasks. Starting from basal physics contexts of the kinematics, kinetics and vibration theory, students should proof them in practical tests. The discrepancies between theoretical calculations and experimental results are presented such as, for example, diagrams and commented in reports. Students can critically assess their results by an error analysis.

Atomic models, types of chemical bonds and the concept of the amount of a substance are well known. The students are able to recognise the type of a chemical reaction and to do basic stoichiometric calculations. They are also familiar with the most important functional groups in organic chemistry and the concepts of polymer chemistry. The students are able to use the concept of structure/effect-relation for the evaluation of textile materials. By use of this concept, they are able to select and evaluate suitable textile materials for specific applications. The relation of polymer chemistry and fiber/textile properties is known by the students and enable them, to evaluate and select the right textile materials for various applications

## General Chemistry

### Inhalte

- atomic models, periodic table
- chemical bonds
- stoichiometry
- solutions, concentrations
- oxidation and reduction
- acids and bases, pH-value
- chemical equilibrium
- kinetics

### Literatur

- R. Lewis, W. Evans: Chemistry, Second Edition, Palgrave, 1999  
R. Pfestorf: Chemie, Verlag Harri Deutsch, 2006  
P. Paetzold: Chemie, Walter de Gruyter, 2009  
E. Wawra, H. Dolznig, E. Müller: Chemie verstehen, UTB-Verlag, 2009

## Organic Chemistry

### Inhalte

- carbon bonds
- nomenclature
- alkanes
- alkenes, isomers
- constitution isomers, stereo isomers - aromatic hydrocarbons
- alcohols, aldehydes, ketones
- carboxylic acids, esters
- amines, amides, aminoacids
- concept of structure/effect relation
- chiral compounds
- sugars
- polymers
- biopolymers
- polysaccharides

### Literatur

T.W. Graham Solomons, C.B. Fryhle: Organic Chemistry - International Student Version, Wiley, 2011  
G. Jeromin: Organische Chemie, Verlag Harri Deutsch, 2008  
J.W. Nicholson: The Chemistry of Polymers, RSC Publishing, 2006  
B. Jastorff, R. Störmann, U. Wölcke: Struktur-Wirkungs-Denken in der Chemie, Universitätsverlag Aschenbeck & Isensee, 2003

## Physics

### Inhalte

Theoretical part:

- Introduction in kinematics, kinetics and vibration theory

Practical part:

- Free Fall
- System acceleration
- Momentum conservation
- Axial moment of inertia

### Literatur

Chabay, R. W.; Sherwood, B. A. (2011): Matter & interactions. 3. ed. Hoboken, NJ: Wiley.  
Halliday, D.; Resnick, R.; Krane, K. S. (2002): Physics. 5th ed. New York: Wiley.  
Goldstein, H. (1981): Classical mechanics. 2. ed., 2. print. Reading, Mass.: Addison-Wesley (Addison-Wesley series in physics).  
Ohanian, H. C. (1985): Physics: Norton.  
Lindner, H.; Siebke, W. (2010): Physik für Ingenieure. Mit zahlreichen Tabellen und Beispielen. 18., aktualisierte Aufl. München: Fachbuchverl. Leipzig Hanser.  
Roberts, D. (1983): Errors, discrepancies, and the nature of physics. In: Phys. Teach. 21 (3).  
Taylor, J. R. (1982): An introduction to error analysis. The study of uncertainties in physical measurements. Mill Valley, Calif.: Univ. Science Books (A series of books in physics).

Modul **TCM-60: Information Technology**

Sprache Englisch  
Verantwortlich Prof. Dr. Klaus Hardt  
Arbeitsbelastung SWS 4 ECTS 6  
60h Präsenz  
60h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
30h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Computer Applications	2	3	2	0	0	0	1
Lehrende/r:	Prof. Dr. Hardt, Klaus							
Voraussetzung:								
Bezeichnung:	Internet and eBusiness	2	3	2	0	0	0	2
Lehrende/r:	Prof. Dr. Hardt, Klaus							
Voraussetzung:								

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-60	Information Technology	Pr	Klausur

Anmerkung

Information technology today is an indispensable part of virtually all areas of work. This ranges from the traditional office applications to a variety of specialized applications for design and construction, CAD / CAM systems for production planning and control, and all variations of business processes.

In the module "Information technology" the students get a broad foundation of knowledge and skills, which they may apply in the further study in these fields of specialization. Given the complexity of today's information systems and the speed of further developments it is essential that these basics include both the hardware, system software and application software.

Students therefore learn about the digital fundamentals and components of a computer system, understand the basic functionality and may derive from it actual and future performance data. This enables them to specify system specifications and to perform system comparisons, but also recognize the technical limitations of use. They can use the standard office applications, word processing, spreadsheet calculation and presentation and apply those also in more complex situations.

The Internet and eBusiness, which is in general defined as doing business electronically has changed significantly all business processes in almost all organisations and is today an essential part of commerce with end customers. Commercial transactions between business partners, often classified as business-to-business is a vital part of modern value networks. Especially in the field of textile and clothing online shops and multi channel retailing is gaining increasing importance.

Therefore students gain in this module the following competences. Students understand the technical principles of the communication in the internet. They are able to describe the changes of business processes due to electronic communication. They are able to identify opportunities and risks of this transformation. Furthermore they develop a deep understanding of underlying data and the methods and procedures to collect, process, evaluate and present this information for necessary management decisions. Almost inherent this affects the field of copyright protection and privacy. Students understand its importance, vulnerabilities and methods to protect against threats.

Without cryptographic methods no secure communication would be possible. Therefore an introduction in this field enables the students to understand the most important requirements for a secure transaction as well as the methods to meet these requirements. Especially they understand the basics of public key encryption and digital signatures.

## Computer Applications

### Inhalte

#### Basics of Computer systems

- Information processing by computer, including binary information handling, number systems and character encoding
- computer architecture and modern concepts of ubiquitous computing and augmented reality
- computer peripherals including input/output systems and storage devices
- basics of operating systems and Windows user interface
- file system and backup procedures
- text processing with WORD
- spread sheet calculation with EXCEL
- color
- basics of computer graphics, especially 3D graphics

### Literatur

own script.

several eLearning modules are available on the eLearning platform moodle and may be used at any time.

in addition several Internet based sources which are accessible free of charge are integrated in the lecture.

## Internet and eBusiness

### Inhalte

#### Basic internet technology

- Internet history
- TCP/IP protocol
- domain name system and addressing

#### Internet services, especially

- email
- WWW
- Multimedia elements

#### eBusiness

- Social and demographic information about internet users
- Economic aspects of eBusiness
- Value chain and eBusiness processes according to the scheme of E. Porter
- Partners in eBusiness
- Business models
- Electronic auctions
- digital products
- electronic catalogues
- electronic market places
- eProcurement
- mCommerce
- e-marketing and website design
- implications for Customer Relationship Management (CRM)

#### Security aspects of internet communication

- requirements for a secure communication
- symmetric and public-key encryption
- Hash function and digital signatures

#### Privacy

- threats
- protection measures

### Literatur

Andreas Meier, Henrik Stormer: eBusiness & eCommerce - Managing the digital Value Chain, Springer-Verlag, 2009

Michael P. Papazoglou, Pieter M. A. Ribbers: e-Business, John Wiley & Sons, 2006

Modul **TCM-70: Business Sciences**

Sprache Englisch  
Verantwortlich Prof. Dr. Gerrit Heinemann  
Arbeitsbelastung SWS 4 ECTS 5  
60h Präsenz  
43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Economics	2	2	2	0	0	0	2
Lehrende/r:	Prof. Dr. Heinemann, Gerrit							
Voraussetzung:	English							
Bezeichnung:	Business Administration	2	3	2	0	0	0	2
Lehrende/r:	Prof. Dr. Ständer, Ute							
Voraussetzung:	none							

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-70	Business Sciences	Pr	Klausur

Anmerkung



Business Science is relevant for all textile and fashion companies. Those enterprises are first of all confronted with scarcity and utility. Normally Business Science consists of economics and business administration. Economics considers the economy as a whole and is following two different perspectives: Microeconomics and Macroeconomics. Macroeconomics is focusing the birds point of view and reflects the country as an economical system. Microeconomics is focused on the frogs perspective, which stands for single units like households and companies. It is more or less reflecting already the business administrative perspective. Contents of business science are for example basic ideas of economics and production, factors of production, scale and location of production, basic ideas of demand and supply, elasticity of price and demand, competitive and monopoly markets. exchange and money, distribution of wealth, rewards to factors, International trade, the balance of payments and free trade areas. Export and import is also part of the companies basic functions in form of global sourcing/purchasing/procurement and international sales/ marketing. In form of extended working banks production is also part of this game. By this business administration cares about all functions and decisions made in companies as well as the relevant management issues.

The students learn the key issues, basic contents and methods of economics as well as business administration. They can distinguish micro- and macroeconomics and understand, how to deal with scarcity. They are able to allocate resources on a simple basis using the ppf-curve. They are also able to explain the quantitative aspect of an economy using the gdp equation. They understand the functions and role of money and how to supply money to markets. They can also explain the inflation, the Inflation index and also the purchase basket, which is used to measure inflation rate. The students are able, to explain a recession, the reason of recessions and in how far governments can fight recessions. They distinguish and compare the risks and benefits of monetary and fiscal policy. Market models will be also part of the student's knowledge. They are able to develop a demand curve as well as a supply curve and explain the market equilibrium. All together the students understand the rules and issues of market cycle models. They know, how a household can achieve equilibrium levels and balanced results. Beside the economical knowledge the students learn also the most relevant issues of business administration and management science. They understand, in how far the economical environment is influencing the companies' decisions. They are able to distinguish the basic types and formats of companies and their specific value chains. They are also able to explain the core processes and their changes due to the digital role. The students can distinguish the main functions and all their specific instruments. They know, how management is deciding and output can be optimised. They also understand the difference between structures and processes. They are able to use also their basic knowledge practice.

## Economics

### Inhalte

#### I. Role and Importance of The German Economy

- Facts and Figures
- Global role
- Relevance for textiles

#### II. Economics - The Science of Dealing with Scarcity

- Specifics of scarcity
- Micro- versus Macro Economics
- Market Economies

#### III. Determining Production Possibilities and Allocating Resources

- PPF Curve
- Allocation decisions
- Effect of technological developments

#### IV. Measuring the Macroeconomy

- GNP and GDP
- Circular Flow Diagram
- Expenditure Equation for Totaling up GDP

#### V. Inflation

- Functions of money
- Determining inflation rate
- Market basket

#### VI. Understanding Recessions

- Reasons for recessions
- Effects of recessions
- Short run and long run effects

#### VII. Fighting Recessions

- The Keynesian Model
- Fiscal policy
- Monetary policy

#### VIII. Supply and Demand as Basis of Microeconomics

- Kinds of demand functions
- Kinds of supply functions
- Unbalanced market situations

#### IX. Utility-Maximizing Consumers versus Profit-Maximizing Firms

- Determining utility
- Utility maximization
- Profit-Maximizing Firm as Core of Capitalism

#### X. Companies as Backbone of an Economy

### Literatur

Flynn, S. (2011): Economics for Dummies.

Koma, J. (2016): Economics. A Beginners Guide to Economics. Kindle Edition.

28.11.2017

Seite 26 von 133

## Business Administration

### Inhalte

#### Basics

- What is business?
- Factors of production
- Private enterprise system

#### Starting a small business

- Definition of small businesses
- Contribution of small businesses to the economy
- Basic forms of business ownership
- The business plan: a foundation for success
- Advantages and disadvantages of small businesses

#### Managing a business

- Managing financial procedures (Accounting, Controlling, Investment appraisal, Finance)
- Managing operations (The operations function, Process design, Capacity planning, Inventory management, Work force management, Quality management)
- Marketing strategies (Selecting a target market, Market segmentation, Marketing mix, - Pricing strategy, Distribution strategy)
- Human resource management (Manpower planning, Recruitment and selection, Training and developing, Compensating employees, Terminating employees)

#### International business

- Competing in global markets (What is international business?, Risks in international business, What motivates firms to go international?)
- Barriers of international trade (Social and cultural differences, Economic differences, Political and legal differences, Trade restrictions)
- Going global (Importers and exporters, International agreements, Offshoring, International direct investment)

### Literatur

- Akwetey, Lawrence Mensah: Business Administration for Students and Managers, Trafford 2011  
Appleby, Robert C.: Modern Business Administration, 6th ed., Pearson 1994  
Boone, Louis E./Kurtz, David L.: Contemporary Business, 15th ed., Wiley & Sons 2012  
Cavusgil, S. Tamer/Knight, Gary/Riesenberger, John: A Framework for International Business, Pearson 2012  
Kotabe, Masaaki/Helsen, Kristiaan: Global Marketing Mangement, 6th ed., Wiley & Sons 2014  
Nickels, William/McHugh, James/McHugh, Susan: Understanding Business, 10th ed., New York 2013  
Schaffer, Richard/Agusti, Filiberto/Dhooge, Lucien J./Earle, Beverley: International Business Law and Ist Environment, 9th ed., South-Western 2014

Modul **TCM-80: Textile Technologies**

Sprache Englisch  
Verantwortlich Prof. Dr. Thomas Weide  
Arbeitsbelastung SWS 4 ECTS 5  
60h Präsenz  
43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Non-wovens	2	2	2	0	0	0	2
Lehrende/r:	Prof. Dr. Groten, Robert							
Voraussetzung:	none							
Bezeichnung:	Spinning	2	3	2	0	0	0	2
Lehrende/r:	Prof. Dr. Weide, Thomas							
Voraussetzung:	Content of Lecture Yarn Technolgy							

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-80	Textile Technologies	Pr	Klausur

Anmerkung

## Übergreifende Modulziele

The students are able to draw principles of the different nonwoven production lines and can explain the different fiber preparation, web forming and web bonding technologies. With given requirements of the final product the students can judge the best fiber material, web forming process and web bonding process for this application. The students can also analyse a nonwoven and explain the used web forming and web bonding technologies.

The students can draw and explain the different spinning technologies and know the advantages and disadvantages of the different spinning technologies. With a given application the students can compare the different spinning technologies, find the best technology and the right setting of the machines. Also the students are able to analyse a given yarn by its structure, can explain which technology was used and can rate the yarn quality.

## Non-wovens

### Inhalte

#### Basics of Nonwovens

- Definitions and Determination
- Classifications of Nonwovens
- Fiber Orientations

#### Raw Materials of Nonwovens

- Important Fiber Properties
- Nonwoven Fiber Consumptions

#### Fiber Preparation for Dry Lay Process

- Technology
- Machines and Processes
- Specific Features of Fiber Preparation for Nonwovens Production

#### Mechanical Web Forming

- Technology
- Carding Processes
- Construction and specific Features of Nonwoven Roller Card
- Cross Laying Process
- Web Properties
- Applications
- Production Calculations

#### Aerodynamic Web Forming

- Technology
- Machine Structure
- Specific Features (High-Loft-Roller and Deflector-Shild)
- Web Properties
- Applications

#### Hydrodynamic Web Forming

- Technology
- Machine Structure
- Web Properties
- Applications

#### Web Forming by Extrusion Process

- Technology
- Machine Structure
- Meltblown-Technology
- SMS-Technology

#### Web Bonding Basics

- Classifications
- Adhesive and Cohesive Bonding

#### Principles of mechanical Web Bonding Technoloies

- Needling
- Looping
- Entangling

#### Principles of thermal Web Bonding Technoloies

- Hot Air Bonding
- Calendering

#### Principles of chemical Web Bonding Technoloies

- Impregnation
- Spraying
- Printing
- Foaming

#### Typical Applications depending on NW-Technologies

#### Literatur

W. Albrecht: Nonwoven Fabrics: Raw Materials, Manufacture, Applications, Characteristics, Testing Processes

## Spinning

### Inhalte

#### Ring Spinning

- Technology
- Settings
- Compact Spinning
- Siro Spinning
- Core Yarn Spinning
- Yarn Structure
- Yarn Quality and Properties

#### Rotor Spinning

- Technology
- Spinnbox Structure and Spinning Components (Combing Roller, Rotor, Take-Up-Navel, Torque-Stop)
- Settings
- Piecing Process
- Yarn Structure
- Yarn Quality and Properties

#### Airjet Spinning

- Differences between different Airjet Spinning Technologies (airjet false twist and airjet real twist spinning)
- Technology
- Construction of Spinning Nozzle
- Settings
- Piecing Process
- Yarn Structure
- Yarn Quality and Properties

#### Other Spinning Processes

- Friction Spinning
- Self-Twist-Process
- Wrap Spinning
- Bobtex-Process

#### Yarn Quality

- Yarn Parameter
- Rating according to Uster-Statistics

#### Production Calculation

### Literatur

#### The Rieter Manual of Spinning (Werner Klein)

- Volume 1: Technology of Short-staple Spinning
- Volume 2: Blowroom & Carding
- Volume 3: Spinning Preparation
- Volume 4: Ring Spinning
- Volume 5: Rotor Spinning
- Volume 6: Alternative Spinning Systems
- Volume 7: Processing of Man-Made Fibres

#### C Lawrence: Advances in Yarn Spinning Technology (Woodhead Publishing)

28.11.2017





Modul **TCM-90: Communication and Teamwork**

Sprache Englisch  
 Verantwortlich Prof. Dr. Walter Harsch  
 Arbeitsbelastung SWS 6 ECTS 6  
 90h Präsenz  
 40h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
 20h Prüfungsvorbereitung

**Lehrveranstaltungen**

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Communication and Presentation	2	2	1	0	1	0	1
Lehrende/r:	Lehrbeauftragte							
Voraussetzung:	None							
Bezeichnung:	Project Management	2	2	1	0	1	0	1
Lehrende/r:	Prof. Dr. Harsch, Walter							
Voraussetzung:	None							
Bezeichnung:	Intercultural Management	2	2	1	0	1	0	2
Lehrende/r:	Prof. Dr. Schwarz-Pfeiffer, Anne							
Voraussetzung:								

**Prüfungen**

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-91	Communication and Presentation	Pr	Klausur
TCM-92	Project Management	Pr	Klausur
TCM-93	Intercultural Management	Pr	Klausur

**Anmerkung**

## Übergreifende Modulziele

Cooperation between people is a basic requirement for successful work. This includes, for example, mutual development and the realization of new solutions in team work as well as the convincing presentation of the achieved results. In the textile and clothing business, which is a very international industry, intercultural aspects should be considered to a high degree. In the module "Communication" the students are furnished with a broad basis of knowledge and skills, which they may apply and improve in numerous other courses in their studies.

Students therefore learn about essential elements of conducting presentations, proceedings and working methods for having meetings, and about planning and performing projects. In such situations as well as in discussions and negotiations they are able to take into account different mentalities of different countries and achieve optimum results which are characterized by a high acceptance of all parties involved.

## Communication and Presentation

### Inhalte

- Basics of communication
- Non-verbal communication
- Verbal communication
- Developing communicative competence
- Communication models: basics and critical comparison
- Communication in intercultural contexts
- Group exercises on communication
- Basics and methods: feedback
- Group exercises on feedback
- Basics for the design of presentations
- Design of presentation templates
- Performing presentations
- Dealing with questions in presentations
- Group exercises on presentations

### Literatur

Comfort, Jeremy/Franklin, Peter: The Mindful International Manager. KoganPage, London, Philadelphia, New Delhi, 2001.

Grussendorf, Marion: English for Presentations. Cornelsen, Berlin, 1. Auflage, 2005.

McKay, Matthew/Davis, Martha/Fanning, Patrick: Messages - The Communication Skills Book. New Harbinger Publications, Oakland CA, 2009.

Seifert, Josef W.: Visualization - Presentation - Moderation. WILEY, Weinheim, 2nd edition, 2002.

Williams, Erica J.: Presentations in English. MacMillan, Oxford, 2008.

## Project Management

### Inhalte

- Basics of Project Management
- Organizational structures of Project Management
- Tasks and competencies of involved parties
- Proceeding and working methods for project planning and project realisation (e.g. network diagrams, bar charts, staff capacity diagrams)
- Group exercises for project planning

### Literatur

Harsch, W.: Manuscript

Diethelm, G.: Projektmanagement. Band 1: Grundlagen. Herne, Berlin, 2000.

Schulz-Wimmer, H.: Projektmanagement Trainer. Planegg, 2003.

Harsch, W.: Manuscript of course, version of the relevant semester.

Richman, L.: Project management step-by-step. New York, Atlanta, Brussels, 2002.

Richman, L.: Improving your Project Management Skills, American Management Association, New York u. a., 2006.

# Intercultural Management

## Inhalte

### Introduction

- Definition of culture
- Meaning and importance of culture
- Values

### Cultural models according to Lewis, Hall, Gesteland and Hofstede

- Classifications
- Country-specific application scenarios

### Culture-specific characteristics of communication

### Influence of culture on management tasks

- Planning
- Organisation
- Staff
- Leading
- Control

### Intercultural teams and collaboration

## Literatur

Geert Hofstede: Lokales Denken, globales Handeln, dtv-Beck Verlag, 3. überarb. Aufl. 2006

Dagmar Kumbier / Friedemann Schulz von Thun (Hg.): Interkulturelle Kommunikation: Methoden, Modelle, Beispiele, Rowohlt Taschenbuch Verlag, Reinbek bei Hamburg 2006

Richard D. Lewis: Handbuch Internationale Kompetenz, campus Verlag, Frankfurt a. M. 2000 (London 1996)

Fons Trompenaars / Peter Woolliams: Business weltweit. Der Weg zum interkulturellen Management, Murmann Verlag GmbH, Hamburg 1. Aufl. 2004 (2003)

Andreas Engelen / Eva Tholen: Interkulturelles Management, Verlag Schäffer Poeschel, Stuttgart 1. Aufl. Juli 2014

Christin Emrich: Interkulturelles Management: Erfolgsfaktoren im globalen Business, Verlag Kohlhammer, Stuttgart März 2011

Niels Bergemann, Interkulturelles Management, Springer Verlag, Heidelberg 3. Aufl. Januar 2013

Modul **TCM-100: Basics of Clothing**

Sprache Englisch  
Verantwortlich Prof. Dr. Karin Finsterbusch  
Arbeitsbelastung SWS 8 ECTS 8  
120h Präsenz  
53h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
27h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Clothing Technology	2	2	2	0	0	0	1
Lehrende/r:	Prof. Dr. Zöll, Kerstin							
Voraussetzung:								
Bezeichnung:	Pattern Making	4	4	2	0	2	0	2
Lehrende/r:	Prof. Dr. Finsterbusch, Karin							
Voraussetzung:	keine none							
Bezeichnung:	CAD Construction of Garments	2	2	0	0	0	2	2
Lehrende/r:	Prof. Dr. Finsterbusch, Karin							
Voraussetzung:	Patternmaking							

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-101	Confection	Pr	Klausur
TCM-102	Pattern Making	Pr	Klausur
TCM-103	CAD Construction of Garments	Pr	Klausur

Anmerkung

## Übergreifende Modulziele

In the modules basic of clothing Students gain consistent basic knowledge in the fields of clothing technology and manual as well as computer aided construction of garments on which continuative studies and evaluation in clothing technology and construction of garments can be established in clothing technology students will get an overview of the meaning and the application fields with manufacturing of textile materials as well as basic knowledge about processes, machines and equipment to manufacture of textile products and their links and interfaces with preliminary textile stages.

Im Modul Bekleidungstechnische Grundlagen erwerben die Studierenden einheitliche Grundkenntnisse in den Bereichen der Konfektionstechnologie und der manuellen sowie der rechnergestützten Bekleidungskonstruktion, auf denen die weiterführenden Studien- und Prüfungsgebiete der Konfektionstechnologie und der Bekleidungskonstruktion aufbauen.

Die Studierenden können:

Students are able to describe and distinguish "design", "pattern construction", "grading" and "lay planning"

They know what happens inside the process of "Pattern Making"

They are able to figure out the historical development from manual pattern making to CAD - computer-aided design.

Students can describe selected pattern making systems and their assets and drawbacks.

Students are able to determine the measurement system related body measurements from individual bodies and calculate finished measurements for selected basic blocks.

They can work with standard measurement tables for men and women and the relations to figure types and target groups.

Students can generate selected basic blocks for men and women wear in selected pattern making systems and create simple style developments on the base of basic blocks

After participating the lecture related practical training "CAD Construction of garments" students can use a selected CAD-System for pattern making in all departments of technical textiles and clothing

Students can work with measurement charts included in the CAD-System

They can develop blocks and styles within the CAD-System

Students can grade pattern pieces and use the lay planning part of the CAD-Systems

Students can create the possible output of product related information for different departments of a company

Die Studierenden können die Begriffe "Design", "Schnittkonstruktion", "Gradiere" und "Schnittbildplanung" beschreiben und wissen, was im "Schnittkonstruktiven Prozess" stattfindet.

Sie sind in der Lage, die historische Entwicklung der manuellen und rechnergestützten Schnittkonstruktion darzustellen.

Sie können ausgewählte Schnittkonstruktionssysteme beschreiben und ihre Vor- und Nachteile für verschiedene Anwendungen bewerten.

Die Studierenden können vom menschlichen Körper Körpermaße abnehmen und daraus Konstruktionsmaße berechnen und können kritisch mit Größentabellen der DOB und HAKA arbeiten, Sie können Grundkonstruktionen/Basiskonstruktionen für DOB und HAKA nach ausgewählten Konstruktionssystemen erstellen und daraus einfache Modellkonstruktionen entwickeln.

Sie können nach dem Besuch des zugehörigen Praktikums "CAD Construction of Garments" ausgewählte CAD- Systeme für die Bekleidungskonstruktion und die Konstruktion Technischer Textilien nutzen, mit Maßstabellen am CAD- System arbeiten, Modellkonstruktionen am CAD- System erstellen sowie Schnitte gradiere und Schnittbilder erstellen.

## Clothing Technology

### Inhalte

The course "Clothing Technology" provides an overview of the processes, technologies and machines of the manufacturing of textile materials.

Specific content:

- Introduction: textile chain, textile and clothing industry - facts and figures, textile product groups
- Cutting room: marker making, spreading and cutting technologies and machines
- Preparation for sewing and Fusing
- Joining technology sewing: sewing machines, sewing tools, stitch types, seam types
- Ironing and finishing: processes, machines
- Alternative joining technologies (e.g. welding, riveting)

### Literatur

Autorengruppe: "Clothing Technology: ... from fibre to fashion"

Verlag: Europa Lehrmittel Verlag; ISBN-10: 3808562250 / ISBN-13: 978-3808562253

Gerry Cooklin: Introduction to Clothing Manufacture, Blackwell Publishing, ISBN 0-632-05697-5, 2005

In addition a detailed script is offered



## Pattern Making

### Inhalte

- Historical background of the development of classical manual and computer aided pattern design
  - Survey of different pattern design systems
  - Definition of standardized terms for the pattern design in different pattern design systems
  - Critical use of ladies and men's body measurement tables
  - Calculation of the design measurements in different pattern design systems
  - Basic design, style design and development of final pattern for selected products of ladies and men's wear
  - Design of leg clothing of different styles for ladies and men
  - Design of bodice clothing of different styles for ladies and men
  - Design of selected sleeve styles
  - Use of CAD-Systems for pattern making of clothing and technical textiles
  - Survey of the different, mostly used in practice, processes of pattern development
  - Demonstration of computer aided pattern development with GRAFIS
- 
- Geschichtlicher Hintergrund der klassischen manuellen und rechnergestützten Bekleidungskonstruktion
  - Überblick über verschiedene Schnittkonstruktionssysteme
  - Definition von Fachbegriffen in verschiedenen Schnittkonstruktionssystemen
  - Kritische Anwendung von DOB- und HAKA Größentabellen
  - Berechnung von Konstruktionsmaßen nach verschiedenen Schnittkonstruktionssystemen
  - Entwicklung von Grund-, Modell- und produktionsreifen Schnitten für ausgewählte Erzeugnisse für Damen und Herren
  - Konstruktion von Beinkleidung verschiedener Art für Damen und Herren
  - Konstruktion von Rumpfbekleidung verschiedener Art für Damen und Herren
  - Ausgewählte Ärmelkonstruktionen
  - Anwendung von CAD-Systeme für die Schnittkonstruktion von Bekleidung und von Technische Textilien
  - Überblick über die am häufigsten in der Industrie genutzten Systeme
  - Demonstration mit dem CAD-System GRAFIS

### Literatur

Finsterbusch, Karin; Mosinski, Erich; Pohl, Herbert: Grundlagen der Bekleidungskonstruktion - System OPTIKON; Hochschule Niederrhein, 4. neubearbeitete und erweiterte Auflage, englischsprachig, 2001

Detering, Ute; Schierling, Rotraud: CONTEC - Bekleidungskonstruktion DOB, Ringbinder, Hochschule Niederrhein, 2003

Hillers, Eva u.a.: Bekleidungskonstruktion System OPTIMASS, Hochschule Niederrhein, 2001

Perkholz, Ursel; Läer, Dorothea: Von der Idee zur Serie; Dr. Felix Büchner; Handwerk und Technik; Hamburg, 1995

Armstrong, Helen Joseph: Patternmaking for fashion design, Harper Collins Publishers

Aufgrund der breiten Fächerung der Lehrinhalte wird zusätzlich mit frei zugänglichen Quellen im Internet gearbeitet. Siehe hierzu die detaillierte Aufstellung von Verweisen auf den Internetseiten der Lehrenden.

Zusätzlich wird den Studierenden ein detailliertes Skript angeboten

Due to the nature of the content reading is done with free available sources in the internet. A detailed listing of related links can be found on the homepage of the lecturer

## CAD Construction of Garments

### Inhalte

#### Objectives:

The lecture will transmit the knowledge to use a 2D-software for pattern construction, grading and marker making in industrial context.

After having successfully completed the lecture the participants will be able to create all production pieces of a garment style within the software - for all required materials - fabric, lining, interlining - and at the end build a print file on scale of 1:1 in individual or graded sizes.

#### Content:

The 2D Software for construction of garments CAD-System "Grafis"

- Historical progress of Grafis
- Working with collections and styles
- Creating measurement charts - standard and individual, body measurements and finished measurements
- Creating basic blocks and styles with variable values and calculated values
- Calling, using and adjusting interactive basic blocks
- Creating garment styles in different levels of development by the use of hereditary automatic
- Familiarization to all standard and interactive tools for style development
- Print of patterns
- Grafis grading - grade rule grading
- Marker making

#### Ziel der Lehrveranstaltung:

Kenntnisse im Umgang mit einer Software für die Schnittkonstruktion, Gradierung und Schnittbildlegen werden vermittelt.

Nach Absolvieren der Veranstaltung sind die Teilnehmer in der Lage, produktionsreife Modelle, d.h. alle zu dem Modell gehörenden Oberstoff-, Futter- und Einlageschnittteile am Bildschirm zu erstellen, die Schnittteile im Maßstab 1:1 auszuplotten und das Modell in unterschiedlichen Größen darzustellen.

#### Lehrinhalte:

Die CAD-Bekleidungskonstruktion wird mit dem CAD-System GRAFIS vermittelt.

- Historische Entwicklung von GRAFIS
- Arbeiten mit Kollektionen und Modellen
- Erstellung von Maßtabellen (Standard- und individuellen Maßtabellen)
- Aufruf von Grundkonstruktionen und Erstellung von Nullaufkonstruktionen
- Einstellung der im System implementierten interaktiven Konstruktionen
- Teilearbeit - Arbeiten mit mehreren Teilen und Vererbungsautomatik
- Modellerstellung auf der Basis verschiedener Entwicklungsstufen
- Erlernen aller Modellierungsfunktionen, wie z.B. Parallele, Konstruktion von Punkten, Strecken und deren interaktiven Entsprechungen
- Kreisbögen, Rechtecken, Abnäherverlegung, Kurvenkonstruktion, Eckenbehandlug und deren interaktiven Entsprechungen
- Einsatz von Konstruktionsparametern und Berechnungsfunktionen
- Plotten, Drucken
- GRAFIS- Gradieren versus Sprungwertgradieren
- Schnittbildlegung

### Literatur

Friedrich, K.: GRAFIS- Handbuch, aktuelle Version

Finsterbusch, Karin; Mosinski, Erich; Pohl, Herbert: Grundlagen der Bekleidungskonstruktion - System OPTIKON; Hochschule Niederrhein, 4. neubearbeitete und erweiterte Auflage, englischsprachig, 2001

Hillers, Eva u.a.: Bekleidungskonstruktion System OPTIMASS, Hochschule Niederrhein, 2001

Zusätzlich wird den Studierenden ein detailliertes Skript angeboten

Modul **TCM-110: Textile Chain**

Sprache Englisch  
Verantwortlich Prof. Dr. Anne Schwarz-Pfeiffer  
Arbeitsbelastung SWS 4 ECTS 5  
60h Präsenz  
43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Textile Chain	4	5	0	0	0	4	2
Lehrende/r:	Prof. Dr. Schwarz-Pfeiffer, Anne							
Voraussetzung:								

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-110	Textile Chain	T	Testat

Anmerkung

## Übergreifende Modulziele

In a first project period students will get theoretical and practical knowledge in all steps of the textile chain from fibre production to the manufacturing of a final product.

The aim of the subject is to apply gained knowledge during lectures in the first semester in practical session. Students are able to develop (semi-)finished textile products, analyse them critically in terms of quality and producibility. Finally they are able to adapt their design accordingly.

Above that, students teams will be formed in order to develop and train the ability for interdisciplinary project work.

The aims of the single steps along the textile chain are described in the following.

### Spinning:

The students will recognize the fundamental work steps of the yarn production in practice. Students will recognize the difference between the most important spinning-processes. Students will learn to assess the yarn quality.

### Weaving:

Students shall learn basics about the structure, production methods, properties and applications of woven fabrics.

### Knitting:

Classification of knitting machines and knitted fabrics.

### Finishing:

It is expected to give the students a survey about finishing technologies. Selected methods will be applied by the students to produce the planned product.

### Clothing Manufacturing:

Students will get basic knowledge about the manufacture of clothing products in design, production engineering, cutting, sewing and final control with regard to quality requirements.

## Textile Chain

### Inhalte

#### Spinning:

- Find out all necessary work steps for the production of a ring and rotor yarn
- Design and produce a suitable ring and rotor yarn
- Determine the most important fibre and yarn parameters
- Main emphasis:
  - visual and technical classification of the cotton
  - calculation of the essential technological parameters
  - explanation of the fundamental ring and rotor spin technique
  - assessment of the yarn quality

#### Weaving:

- Analysis of woven fabrics
- Basic weaves
- Color-and weave effects
- Properties and Applications

#### Knitting:

- Laboratory tour with explanation of all knitting machines
- Knitting on manual looms
- Field trip in shops with knitted fabrics
- Study of advertisements for knitted fabrics

#### Finishing:

##### Survey of the machines which can be used at the faculty:

- dyeing machines like jiggers, jet dyeing machines
- printing machines
- sizing machines
- stenter frame
- foulards
- coating machines
- machinery for dry finishing
  - raising
  - shearing
  - cutting

#### Clothing Manufacturing:

- Students will get basic knowledge about the manufacturing steps as well as equipment and machinery
- Practical work during producing a clothing product considering the fit, the accuracy of manufacture and quality aspects

### Literatur

Eberle, Hermeling, Hornberger, Menzer, Ring: Clothing Technology....from fibre to fashion, Verlag Europa-Lehrmittel, Haan-Gruiten, 2007

Modul **TCM-120: Accounting**

Sprache Englisch

Verantwortlich Prof. Dr. Ute Ständer

Arbeitsbelastung SWS 4 ECTS 5

60h Präsenz

43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)

22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Managerial Accounting	2	2	1	0	1	0	3
Lehrende/r:	Prof. Dr. Ständer, Ute							
Voraussetzung:	none							
Bezeichnung:	Financial Accounting	2	3	1	0	1	0	3
Lehrende/r:	Prof. Dr. Ständer, Ute							
Voraussetzung:	none							

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-120	Accounting	Pr	Klausur

Anmerkung

## Übergreifende Modulziele

Managing the financial procedures is perhaps the most important task when running a business, as without sufficient financial resources and without achieving profits no business can survive. Accounting forms an important part of managing the financial procedures of a company. The purpose of accounting is to register, monitor, and analyse all company affairs numerically.

By recording all money flows and flows of goods in a company external parties like suppliers, banks, or investors are informed. Based on legal regulations, every company is obliged to record all transactions and to prepare the financial statements. These tasks of accounting are called financial accounting.

Accounting also has to inform the company itself about profitability, cost and price calculation. Moreover, standard costs and budgets must be planned. This part of accounting is called managerial accounting.

The students have got an overview about all relevant topics of managerial and financial accounting. They know the differences between managerial and financial accounting and their respective goals. They know the components of financial statements. They know the double entry system and can record transactions in the journal and the ledger by themselves. They understand the purpose of adjusting entries and can record them. They are able to close the books and to prepare the financial statements after recording all transactions.

They are able to apply various cost accounting methods in order to calculate unit cost and know which type of business apply the respective method. They know various pricing strategies and are able to calculate the operating result based on absorption costing as well as based on variable costing. They know the importance of standard costs and can calculate them. They can calculate and interpret differences that may occur in the following variance analysis. Finally, they are familiar with the basics of budgetary planning.



# Managerial Accounting

## Inhalte

### Basics of Managerial Accounting

- Definition of Managerial Accounting
- Comparing Managerial and Financial Accounting
- Goal of Managerial Accounting
- Cost Terms (Variable, Fixed and Mixed Cost, Product and Period Cost)
- Cost-Volume-Profit Analysis (Break-Even Point, Margin of Safety, Contribution Margin)

### Job Order Costing

- Characteristics
- Job Cost Sheet
- Accumulating Direct Job Cost
- Accumulating Manufacturing Overhead
- Under-/Overapplied Manufacturing Overhead
- Job Order Costing for Service Companies

### Process Costing

- Characteristics
- Calculating Unit Cost

### Activity-Based Costing

- Definitions
- Classification of Activities
- Activity-Based Unit Cost
- Evaluation

### Pricing

- The Profit-Maximizing Price
- Cost-Plus Pricing
- Target Costing
- Pricing Special Orders

### Variable Costing

- Absorption Costing versus Variable Costing
- Effects of Deviating Production and Sales Volume

### Standard Cost

- Setting Standard Cost
- Variance Analysis

### Budgetary Planning

- Budgeting Basics
- Preparing the Master Budget

## Literatur

Davis, Charles E./Davis, Elizabeth: Managerial Accounting, 2nd ed., Wiley & Sons 2014

Jiambalvo, James: Managerial Accounting, 6th ed., Wiley & Sons 2016

Weygandt, Jerry J./Kimmel, Paul D./Kieso, Donald E.: Managerial Accounting: Tools for Business Decision Making, 7th ed., Wiley & Sons, 2015

# Financial Accounting

## Inhalte

### Introduction

- What is Accounting?
- Historical Development
- Who Uses Accounting Data?
- Conventional Accounting Rules (Boundary Rules, Measurement Rules, Ethical Rules)
- International Accounting Standards

### Basics of Accounting

- The Basic Accounting Equation
- Using the Accounting Equation
- Components of Financial Statements

### The recording process

- The Account
- The Journal
- The Ledger
- Posting
- The Trial Balance

### Adjusting the Accounts

- Basics of Adjusting
- Types of Adjusting Entries
- The Adjusted Trial Balance
- Preparation of Financial Statements
- Alternative Treatment of Prepaid Expenses and Unearned Revenue

### Closing the Books

- Temporary and Permanent Accounts
- Preparing Closing Entries
- The Post Closing Trial Balance

### The Classified Balance Sheet

- Non-current Assets
- Current Assets
- Equity
- Non-current Liabilities
- Current Liabilities

## Literatur

Baker, S.: A student's guide to Preparing Financial Statements, Workingham 2013

Dick, W./Missonier-Piera, F.: Financial Reporting under IFRS, Wiley & Sons 2010

Dyson, J. R.: Accounting for non-accounting students, 8th ed., Pearson 2010

Kieso, D. E., Weygandt, J. J./Warfield, T. D.: Intermediate Accounting: IFRS Edition, 2nd. ed., Wiley & Sons 2014

Weygandt, J. J./Kimmel, P. D./Kieso, D. E.: Financial Accounting, IFRS Edition, 3rd. ed., Wiley & Sons 2015

Modul **TCM-130: Law**

Sprache Englisch

Verantwortlich Prof. Dr. Ute Ständer

Arbeitsbelastung SWS 2 ECTS 2

30h Präsenz

13h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)

7h Prüfungsvorbereitung

#### Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Labour and Employment Law	2	2	1	0	1	0	3
Lehrende/r:	Prof. Dr. Ständer, Ute							
Voraussetzung:	none							

#### Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-130	Labour and Employment Law	Pr	Klausur

#### Anmerkung

## Übergreifende Modulziele

Employment and Labour Law is a special right concerning the relationship between employers and employees. It especially contains privileges for employees as the weaker contracting partner like the entitlement to paid leave, continued remuneration in case of sickness, and, subject to certain conditions, general and special dismissal protection.

The students know the sources of and differences between Employment and Labour Law, the order of rank of the sources of law and important acts. Concerning Employment Law they know the steps of the hiring process and can formulate a job advertisement in accordance with the General Equal Treatment Act. They know the duties of employers and employees during the employment relationship as well as at its end. The students know the reasons for terminating employment relationships and especially the preconditions for an orderly dismissal as well as for a dismissal for cause. They know the regulations of the Dismissal Protection Act. In each case they are able to solve simple case studies by applying the acquired knowledge.

Within Labour Law they know the collective bargaining parties and the basic concepts of the collective bargaining law. They can evaluate if a strike is legal and know the procedure of industrial action. Finally, they are familiar with the basics of the Works Constitution Act and know the different rights of participation of the works council in case of various business decisions.

## Labour and Employment Law

### Inhalte

#### Fundamentals

- Definitions and System
- Legal Sources (Laws, Collective Bargaining Agreements, Works Agreements, Employment Contracts, Operational Practice, Case Law, Hierarchy of Legal Sources)

#### Employment Law

- Creation of Employment Relationship (Recruitment Process, Concluding Employment Contracts, Invalid Employment Contracts)
- Obligations of the Employee (Obligation to Work, Ancillary Obligations)
- Obligations of the Employer (Obligation to Pay Remuneration, Ancillary Obligations)
- Business Transfer
- Termination of Employment Relationship (Ordinary Dismissal, Dismissal for Cause, Dismissal for Variation of Contract, Termination Agreement, Obligations of the Employer and of the Employee in case of terminating an Employment Relationship)

#### Labour Law

- Freedom of Association (Definition, Trade Unions, Employers' Associations)
- Collective Bargaining Agreements Law (Content of Collective Bargaining Agreements, Types of Collective Bargaining Agreements, Binding Effect of Collective Bargaining Agreements)
- Industrial Action (Basics, Strike, Lockout)
- Law Governing Works Councils (Basics, Rights of Participation and Codetermination, Works Agreement)

### Literatur

- Däubler, Wolfgang: Arbeitsrecht, 11. Aufl., Frankfurt am Main 2015  
Dütz, Wilhelm/Thüsing, Gregor: Arbeitsrecht, 20. Aufl., München 2015  
Junker, Abbo: Grundkurs Arbeitsrecht, 15. Aufl., München 2016  
Kirchner, Jens/Kremp, Pascal R./Magotsch, Michael: Key Aspects of German Employment and Labour Law, Heidelberg 2010  
Lingemann, Stefan/von Steinau-Steinrück, Robert/Mengel, Anja: Employment & Labor Law in Germany, 4th. Ed., München 2015

Modul **TCM-140: Quality**

Sprache Englisch  
Verantwortlich Prof. Dr. Lutz Vossebein  
Arbeitsbelastung SWS 6 ECTS 6  
90h Präsenz  
40h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
20h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Statistics	2	2	1	0	1	0	3
Lehrende/r:	Prof. Dr. Voller, Rudolf							
Voraussetzung:								
Bezeichnung:	Applied Quality Control	4	4	2	0	0	2	3
Lehrende/r:	Prof. Dr. Vossebein, Lutz							
Voraussetzung:	Textile Werkstoffe (Textile Materials) Basic knowledge Fadentechnologie (Yarn Technology) Flächentechnologie (Fabric Technology) textile materials, yarn technology, fabric technology, clothing technology, data management and statistics							

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-140	Quality	Pr	Klausur

Anmerkung

## Übergreifende Modulziele

Theory and practise of quality control especially in focus of textile and clothing industry is topic of the lecture and practical exercises. The students can check the conditions for the performing textile testing, can explain the principle of the main physical tests and can perform these using suitable equipment. They can decide about the acceptance or rejection of the delivery and they can apply effective quality control during the production process. Further more students learn how to perform a risk analysis (Hazard Analysis). Communication skills and formalities of risk assessments by giving a presentation and doing an elaboration.

## Statistics

### Inhalte

#### Descriptive Statistics

- Introduction

- Definitions and Basics

- Graphical Representation of Data

- Class evaluation, Histogram

- Correlation and Regression

#### Probability and Combinatorics

- Probability Calculation

- Random Variables and Distributions

- Parameter estimation, Confidence Interval

#### Statistical Inference

- Parameter Tests

- Adaptation Tests

- Two Parameter Tests

- Contingency tables, chi-square-test

- Outlier Tests

#### Quality Control

- Sampling Procedures

- OCC, AQL and RQL

- Control Charts

#### Analysis of Variances

### Literatur

Bona, Mario: Statistical Methods for the Textile Industry, Textilia, Biella

Suhov, Kelbert: Probability and Statistics by Example I, Cambridge University Press

P. I.: Re-Sampling Methods, A Practical Guide to Data Analysis, Birkhäuser Verlag

## Applied Quality Control

### Inhalte

- Definition of quality, components of quality management
- Basics of textile testing: sampling, conditions, humidity, test methods and criteria
- Physical testing methods for fibers, yarns, woven structures, knitted structures, fleece, clothing
- Evaluation of quality of textile products along the textile chain from fiber to end product in clothing, technical textiles or regular textiles under physical and chemical aspects
- Statistics as helpful tool
- Risk assessment / elaboration
- Presentation within the practical training
- practical training / testing textiles

### Literatur

R. Trucker, B. Sherring-Lucas, ISO 9001:2000, Butterworth-Heinemann 2001  
ISO - Standards, ASTM-Standards concerning quality management, Textile testing of fibers, filaments, yarns, twists, fabrics, nonwovens, manufactured products, statistics, Beuth Publisher  
B.P. Saville, Physical testing of textiles, Woodhead Publishing LTD, England 2000  
Quality Control in the Textile Industry  
Springer-Verlag London Limited 2007  
DOI 10.1007/978-1-84628-498-4\_10  
Print ISBN 978-1-84628-497-7  
Online ISBN 978-1-84628-498-4  
Design principles for integrated automated statistical quality-control systems in manufacturing  
A. S. Gorelov, V. V. Preis, V. B. Soskov in Russian Engineering Research (2008)



**Modul TCM-150: Guided Projects**

Sprache Englisch  
Verantwortlich Prof. Dr. Maike Rabe  
Arbeitsbelastung SWS 4 ECTS 5  
60h Präsenz  
43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
22h Prüfungsvorbereitung

**Lehrveranstaltungen**

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Guided Projects	4	5	2	0	2	0	3
Lehrende/r:	Prof. Dr. Rabe, Maike							
Voraussetzung:								

**Prüfungen**

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-150	Guided Projects	T	Testat

**Anmerkung**

## Übergreifende Modulziele

The students are competent to handle textile technology, design or management related problems and to find problem solving procedures. They also know how to research for the necessary information and how to present the results in written and oral forms.

## Guided Projects

### Inhalte

The Guided Projects cover different topics of the textile production chain: Subtopics out of the fields of spinning, weaving, knitting, finishing, manufacturing, design and management will be presented and elected according to modern problems in textile and clothing industry. The students elaborate these subtopics in teams and present their results in reports and presentations.

### Literatur

Modul **TCM-160: Textile Production**

Sprache Englisch

Verantwortlich Prof. Dr. Marcus Weber

Arbeitsbelastung SWS 4 ECTS 5

60h Präsenz

43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)

22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Weaving	2	2	1	0	1	0	3
Lehrende/r:	Prof. Rieschel, Andrea							
Voraussetzung:								
Bezeichnung:	Knitting Technology	2	3	1	0	1	0	3
Lehrende/r:	Prof. Dr. Weber, Marcus							
Voraussetzung:								

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-160	Textile Production	Pr	Klausur

Anmerkung

## Übergreifende Modulziele

The learners are expected to be able to:

- Explain and distinguish between processes of weaving and knitting
- Determine and classify different samples of woven and knitted fabrics
  
- Deals with the design and the structure of woven fabrics, especially weave notations of woven fabrics.
- Know first short weave notations and the drawing of weave diagrams.
- Understand basic weaves, their advancements and their properties
- Explain and realize colour-and-weave effects, fancy weaves and backed fabrics as well as the draw up of the necessary weave diagrams
- Analyse and construct samples on basis of examples
  
- Identify different fabrics and classify them in single face, double face and purl
- List and structure different patterns in flat and circular knitting, warp knitting
- Explain the main machine parts in knitting
- Explain the stitch formation processes
- Build up loop drawings with needle notations/ lapping diagrams and vice versa
- Analyse exemplary pattern designs
- Define and describe different fabric forming technologies in knitting, such as flat and circular knitting, warp knitting

## Weaving

### Inhalte

The lecture "Weaving" deals with the design and the structure of woven fabrics, especially weavenotations of woven fabrics. Participants shall learn at first short notations and the drawing of weave diagrams. Basic weaves, their advancements and their properties should be understood. With the help of exercises, participants shall learn the realisation of colour-and-weave effects, fancy weaves and backed fabrics as well as the draw up of the necessary weave diagrams.

Analysis and construction is practiced on basis of examples

- Short numerical notations
- Draw up of weave diagram
- weavenotation, draft and liftingplan, stich
- Thread assimilation, yarn settings,
- basic weaves like plain, twill, satin
- Colour-and-weave effects
- Advanced basic weaves, modifications
- Fancy weaves
- Backed fabrics, additional weft system, weftdouble

### Literatur

Prof. Dipl.Ing. A. Rieschel: Script of lecture Weaving Technology, Hochschule Niederrhein, Mönchengladbach, 2015

Adanur, S.: Handbook of Weaving, Technomic Publ. Company, Lancaster PA 2001

Robinson, A.; Marks, R.: Woven cloth construction, The Textile Institute, Manchester 1973

Grosicki, Watson's Textile Design and Color, Newnes-Butterworths, London 1975

# Knitting Technology

## Inhalte

### Knitting Application

- Consumption by end-use
- Examples for application
- Exercises

### Knit Structures

- Fibres and yarns in knitting
- Stitches and structural elements
- Exercises

### Needle arrangement, needles

### Principles of stitch formation

### Flat Knitting

- Machine elements of a flat knitting machine
- Parameters of flat knitting machines
- Selected pattern and needle notation
- Exercises

### Circular Knitting

- Machine elements of a circular knitting machine
- Parameters of circular knitting machines
- Selected pattern and needle notation
- Exercises

### Warp Knitting

- Machine elements of a warp knitting machine
- Parameter of warp knitting machines
- Lapping diagrams
- Selected pattern
- Exercises

## Literatur

Spencer, D. J., Knitting technology - a comprehensive handbook and practical guide, Woodhead Publishing, Cambridge England, 2001

Ray, C. S.: Fundamentals and advances in knitting technology. Woodhead Publishing India Pvt. Ltd. 2011

Au, K. F.: Advances in knitting technology. Woodhead Publishing Ltd. Cambridge 2011

Iyer, C.; Mammel, B.; Schäch, W.: Circular Knitting - Basic know-how. Meisenbach Bamberg 1991

Brackenbury, T.: Knitted Clothing Technology. Blackwell Science Ltd. Oxford 1992

Wilkens, C.: Warp Knit Fabric Construction. U. Wilkens Verlag Heusenstamm 1995

Gajjar, B. J.: Warp Knit Fabrics Technologies. Emerald Ink Publishing Hot Springs 2007

Weber, M.; Weber, K. P.: Die Wirkerei und Strickerei. Deutscher Fachverlag GmbH, Frankfurt 2014 including English Index

Youtube Video Channel (<http://www.youtube.com/user/MarcusOliverWeber>)

[www.groz-beckert.com](http://www.groz-beckert.com) Produkte & Services Knitting Mediathek Animationen zur Maschenbildung

[www.stoll.com](http://www.stoll.com)

[www.mayerandcie.com](http://www.mayerandcie.com)

[www.warpknitting4u.com](http://www.warpknitting4u.com) und [www.youtube.com/user/RoBaempfer](http://www.youtube.com/user/RoBaempfer)

[www.karlmayer.com](http://www.karlmayer.com)

Die Kettenwirkpraxis International (KPI), Zeitschrift für die Kettenwirkerei, Werkgemeinschaft Karl Mayer e. V., Obertshausen

Melliand Textilberichte International (MTBI)

Textile Networks

Textile Research Journal (TRJ)

Asian Textile Journal

Fibers and Textiles in Eastern Europe

Journal of the Textile Institute (JTI)

Modul **TCM-170: Sustainability**

Sprache Englisch

Verantwortlich Prof. Dr. Lutz Vossebein

Arbeitsbelastung SWS 4 ECTS 5

60h Präsenz

43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)

22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	CSR Management	2	2	2	0	0	0	3
Lehrende/r:	Prof. Dr. Voller, Rudolf							
Voraussetzung:								
Bezeichnung:	Environmental Management	2	3	2	0	0	0	3
Lehrende/r:	Prof. Dr. Vossebein, Lutz							
Voraussetzung:								

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-170	Sustainability	Pr	Klausur

Anmerkung

## Übergreifende Modulziele

The learner is able to identify responsibilities of natural resources and name relevant laws and regulations. The students know the triple bottom line, a model for sustainability and CSR. Furthermore they know the most important social as well as environmental standards and their impact for the textile value chain and the most important CSR standards.

The students know the basic theory of ecology and the origin of hazardous chemicals in textile and clothing industry. They are able to explain the green house effect and how to avoid relevant emissions within the textile chain. Furthermore they know about business specific eco labels within the textile production chain as well the basic principle of REACh. The communication will be improved by a team presentation about ecological relevant topics.



## CSR Management

### Inhalte

#### Sustainability:

History: Forestry/Global2000/Climate Change/Globalisation/Demographic Change/Rio 1992 - 2012

Dimensions of Sustainability: Economy / Ecology / Social aspects

#### Definition CSR:

Pyramide of Carroll / Triple Bottom Line / House of CSR

EU / OECD / UNGC / ISO 26000

Citizenship, Governance, Corporate Sustainability

#### CSR in the Textile and Clothing Industry:

Challenges: Rana Plaza / Detox

Responses: Fire Accord, Partnership for Sustainable Textiles, ZDHC

#### The Textile Value Chain:

Environment: Chemicals, Pesticides, Energy Consumption, Transport Costs, Waste Management/Recycling

Social: Work conditions, ILO norms, Living Wages

#### Stakeholder Management:

Stakeholder, Wesentlichkeitsanalyse, NGOs

Transparency and Communication

#### Business Case CSR:

Vision, Strategy, Integration of CSR

Sustainability Reports, EU Guideline

Value Chain, Quality and Risk Management

#### Standards and Certificates:

Global Compact

Reach/EMAS/ISO14000/Bluesign

SA8000/Fairtrade/WRAP

IVN Best/GOTS/Oekotex

#### Outlook:

Business and Human Rights

Sustainable Development Goals

The unknown Customer

### Literatur

Idowu, Samuel O., Louche, Celine: Theory and Practice of Corporate Social Responsibility, 2011, Springer Verlag

Andrew W. Savitz, Karl Weber: The Triple Bottom Line: How Today's Best-Run Companies Are Achieving Economic, Social and Environmental Success -- And How You Can Too, 2013 Jossey-Bass

Idowu, S., Frederiksen, C.S., Mermod, A.Y., Nielsen, M.E.J.: Corporate Social Responsibility and Governance

Theory and Practice, 2015 Springer Verlag

Idowu, Samuel O. / Schmidpeter, René, Fifka, Matthias S.: Corporate Social Responsibility in Europe, 2015, Springer Verlag

[http://ec.europa.eu/growth/industry/corporate-social-responsibility\\_de](http://ec.europa.eu/growth/industry/corporate-social-responsibility_de)

<http://www.unglobalcompact.org>

## Environmental Management

### Inhalte

Students will learn why Environmental Management Systems are needed and how they could be implemented (e.g. acc. to ISO 14001ff). Therefore basic definitions of ecology and specific ecological footprints will be taught and calculated. Legislation and the role of environmental laws (on national and international levels) are explained. An overview of most important eco labels and its role in industry and for consumers will be given. Students will learn how to evaluate specific governmental, non-governmental and private eco labels. With regards to cost reduction and energy savings different energy sources, waste water treatment plants and systems as well as exhaust air treatment possibilities and waste management will be discussed. The students have to give a team presentation of an environmental related topic.

### Literatur

- DIN EN ISO 14001: Environmental management systems - Requirements with guidance for use (ISO 14001:2015); German and English version EN ISO 14001:2015
- DIN EN ISO 14004: Environmental management systems - General guidelines on principles, systems and support techniques (ISO 14004:2004); German and English version EN ISO 14004:2010
- DIN EN ISO 14040: Environmental management - Life cycle assessment - Principles and framework (ISO 14040:2006); German and English version EN ISO 14040:2006
- DIN EN ISO 14044: Environmental management - Life cycle assessment - Requirements and guidelines (ISO 14044:2006); German and English version EN ISO 14044:2006
- DIN EN ISO 14050: Environmental management - Vocabulary (ISO 14050:2009); Trilingual version EN ISO 14050:2010
- Bell, S.: Sustainability Indicators, Erarscan, London, 2001.
- Blackburn, R.: Biodegradable and Sustainable Fibers, CRC Press, Woodhead Publishing, 2005.
- Burrall, P.: Product Development and the Environment, Gower Publishing, Aldershot, 1996.
- Rouette, H.-K.: Encyclopedia of Textile Finishing, Vol. 1-3, Springer Verlag Heidelberg, 2001.
- Rees, W.: Our ecological footprint
- Journal: e.g. Melliand (English)

Modul **TCM-180: Finishing**

Sprache Englisch

Verantwortlich Prof. Dr. Maïke Rabe

Arbeitsbelastung SWS 4 ECTS 5

60h Präsenz

43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)

22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Finishing	4	5	4	0	0	0	3
Lehrende/r:	Prof. Dr. Mahltig, Boris Prof. Dr. Rabe, Maïke							
Voraussetzung:	fundamental background knowledge in natural science, especially in chemistry, polymers and spectroscopy							

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-180	Finishing	Pr	Klausur

Anmerkung

## Übergreifende Modulziele

The students know the technology and chemistry of pretreatment, dyeing printing and finishing of textiles. They are competent to select the right procedures for the most important fibres such as cotton, viscose, wool as natural fibres and polyamide, polyester, polyacrylics and elastic fibres. Further more they have a good knowledge of textile finishing machinery for washing, pretreatment, dyeing, drying and fixation as well as finishing.

## Finishing

### Inhalte

The subject comprises pretreatment, coloration and finishing.

#### 1. Pretreatment:

- Fundamental introduction into the pretreatment of cotton, wool and polyester
- Fundamental introduction into the chemistry and technology of washing

#### 2. Coloration:

- Fundamental introduction to light, colours, dyes and pigments
- Chromophores, auxochromes
- Introduction to different categories of dyes according to the color index
- Dye/fiber interaction; concept of dye anchoring and color
- Coloration processes in dyeing and printing for natural and synthetic fibers
- As specially: direct dyes, reactive dyes, acid dyes, basic dyes, vat dyes, azoic dyes, sulphur dyes, disperse dyes
- Metal complex dyes / mordant dyes
- physical and chemical mechanism of dyeing and finishing
- processes and machines / continuous and discontinuous dyeing machines
- printing techniques and printing machines
- testing of coloration properties and fastness properties
- ecological aspects

#### 3. Finishing

- concepts of chemical finishing and mechanical finishing
- hydrophilic effects and antistatic effects
- easy care effects and wash and wear effects
- flame retardant treatment
- water barrier textiles by coating, lamination and impregnation
- raising, shearing, calandring

### Literatur

- W. Perkins: Textile Coloration and Finishing, Carolina Academic Press, 1996  
H.-K. Rouette: Encyclopedia of Textile Finishing, Vol. 1-3, Springer Verlag Heidelberg, 2001  
J. Shore: Cellulosics Dyeing, Society of Dyers and Colourists, 1995  
W. Ingamells: Colour of Textiles, Society of Dyers and Colourists, 1993  
B. Jastorff, R. Störmann, U. Wölcke: Struktur-Wirkungs-Denken in der Chemie, Universitätsverlag Aschenbeck & Isensee, 2003  
C. Clark: Handbook of textile and industrial dyeing, Volumes 1 and 2, Woodhead Publishing, 2011

**Modul TCM-190: Projects**

Sprache Englisch  
Verantwortlich Prof. Dr. Kerstin Zöll  
Arbeitsbelastung SWS 6 ECTS 7  
90h Präsenz  
57h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
28h Prüfungsvorbereitung

**Lehrveranstaltungen**

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Projects	6	7	0	0	0	6	5
Lehrende/r:	Prof. Dr. Hardt, Klaus							
Voraussetzung:								

**Prüfungen**

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-190	Projects	Pr	Ausarbeitung

**Anmerkung**

## Übergreifende Modulziele

The students acquire basic and practical experience in project planning and implementation and therefore they are able to manage new, complex tasks systematically and to develop practical solutions. The students have a wide range of approaches and working methods that can be used to handle all the necessary steps to plan and execute projects. A special focus is on working in the team. They know problems that can occur in different phases of the project, as well as their solutions, and train and expand their social, methodological and personal competences. They are able to apply acquired knowledge in special areas of textile and clothing technology, design and other engineering sciences, to deepen them and to develop new solutions.

## Projects

### Inhalte

Students work on given subjects in teams of 9-10 students. The subjects are specified either by companies or from the university.

The teams are formed by lot from all Bachelor study courses and branches.

- self responsible project planning and work in student teams
- application of project planning and working tools
- systematic development of specified goals und very restrictive time pressure and limited financial budget
- interim presentation of project plan and final presentation of project results

The participation at the frequent team meetings, the interim presentation and the final presentation is obligatory.

### Literatur

Neuland, M.: The World of Moderation. Künzell, 1998.

Richman, L.: Project Management Step-by-step. AMACOM American Management Association, New York, Atlanta, Brussels, 2002.

Modul **TCM-200: Study Work**

Sprache Englisch

Verantwortlich Prof. Dr. Klaus Hardt

Arbeitsbelastung SWS 2 ECTS 5

30h Präsenz

63h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)

32h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Study Work	2	5	0	0	0	2	4
Lehrende/r:	Prof. Dr. Hardt, Klaus							
Voraussetzung:	none							

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-200	Study Work	Pr	Studienarbeit

Anmerkung

## Übergreifende Modulziele

Scientific working and scientific writing are essential skills every student has to adapt in the Bachelor studies. The making of a study work is a very good method to improve these skills.

Students are able to do literature research. They are able to work out individual solutions within a specific topic and describe their results in a scientific text.

## Study Work

### Inhalte

Teachers of the department offer every semester specific topics for a study work. The students are able to select from this list and work out the study work on their own.

### Literatur

Individual literature according to selected topic.



Modul **TCM-210: Electives**

Sprache Englisch  
Verantwortlich . - alle Lehrende des Fachbereichs  
Arbeitsbelastung SWS 40 ECTS 50  
600h Präsenz  
433h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
217h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Individual Module Selection	0	0	0	0	0	0	4
Lehrende/r:	alle Lehrende des Fachbereichs							
Voraussetzung:								
Bezeichnung:	Individual Module Selection	0	0	0	0	0	0	5
Lehrende/r:	alle Lehrende des Fachbereichs							
Voraussetzung:								

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-210	Electives	Pr	Klausur

Anmerkung

From the list of modules in the elctives catalogue 10 modules must be selected

## Übergreifende Modulziele

A list of 16 modules is offered (see "TCM electives"). From this list students must select and pass 10 modules.

By this students can individually focus on desired fields of knowledge.

### Individual Module Selection

#### Inhalte

students may individually select from a list of offered lectures (see electives catalogues).

#### Literatur

specific according to selected lecture

### Individual Module Selection

#### Inhalte

students may individually select from a list of offered lectures (see electives catalogues).

#### Literatur

specific according to selected lecture

Modul **TCM-220: Finalizing Seminars**

Sprache Englisch

Verantwortlich Prof. Dr. Boris Mahltig

Arbeitsbelastung SWS 6 ECTS 12

90h Präsenz

140h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)

70h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Workshop Scientific Methods	4	4	0	4	0	0	7
Lehrende/r:	Prof. Dr. Mahltig, Boris							
Voraussetzung:	none							
Bezeichnung:	Seminar Final Thesis	2	8	0	2	0	0	7
Lehrende/r:	Prof. Dr. Mahltig, Boris							
Voraussetzung:	none							

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-221	Workshop Scientific Methods	T	Testat
TCM-222	Seminar Final Thesis	T	Testat

Anmerkung

## Übergreifende Modulziele

The students place their final topic of the bachelor thesis in a scientific environment. A methodic and suitable workplan and timetable for realizing the thesis is presented and discussed. They present the used or proposed research methods and intermediate results in a (self-)critical reflection. The own work and the results of the other participants together give an up-to-date overview of the specific subject. The supervisors participate at the presentations and discussions.

## Workshop Scientific Methods

### Inhalte

Offered contents may vary from year to year. Some courses will be realized and offered as eLearning courses.

The following topics are fixed:

- Evaluation of numerical data and statistical test results by using SPSS and Excel
- Deepened recherche in databases and for patents
- Presentation skills and rhetoric
- Writing scientific papers, especially the final thesis, using MS Office

### Literatur

Dependent on topic

general helpful for writing training are:

- V. Ahrens, Abschlussarbeiten richtig gliedern, 2014, vdf Hochschulverlag Zürich
- E. Müller, Schreiben in Naturwissenschaften und Medizin, 2013, UTB
- J. T. Yang, Scientific Writing, 1995, World Scientific, Singapore
- R. Bradbury, Zen in the Art of Writing, HarperCollins UK

## Seminar Final Thesis

### Inhalte

Students, who got a reservation of a special topic für their final bachelor thesis, come together in subject-specific groups of about 6 students.

Presentation of the status regarding the work on the thesis, the current scientific base, the used and proposed methods and probably first results

- Working paper about this status
- Guidance through a subject-specific discussion about the presentation
- Participation at all other group meetings

### Literatur

dependent on the topic of the bachelor thesis

helpful for writing thesis:

V. Ahrens, Abschlussarbeiten richtig gliedern, 2014, vdf Hochschulverlag Zürich

E. Müller, Schreiben in Naturwissenschaften und Medizin, 2013, UTB

J. T. Yang, Scientific Writing, 1995, World Scientific, Singapore

R. Bradbury, Zen in the Art of Writing, HarperCollins UK

Modul **TCM-390: Internship Semester or Semester Abroad**

Sprache Englisch  
Verantwortlich . - alle Lehrende des Fachbereichs  
Arbeitsbelastung SWS 30 ECTS 30  
450h Präsenz  
200h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
100h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Internship Semester or Semester Abroad	30	30	0	0	0	30	6
Lehrende/r:	alle Lehrende des Fachbereichs							
Voraussetzung:	a minimum of 89 CP							

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-390	Internship Semester or Semester Abroad	T	Testat

Anmerkung

## Übergreifende Modulziele

The internship semester gives students insight in their future work by joining an internship in a company in the textile and clothing industry. The employability is improved by practicing the knowledge and skills learned in the study courses in an industrial environment.

After the end of the internship the students have to handout a written report to the university's supervisor. It includes a description of the work done in the internship as well as a personal resume.

As an alternative to the internship the students may do a semester abroad at a foreign university. This will improve significantly their language skills, intercultural competences as well as specific knowledge. Students have to pass at least a volume of 20 Credit Points at the foreign university. In addition they have to handout a written report to the university's supervisor. It includes a description of the joined courses as well as a personal resume

## Internship Semester or Semester Abroad

### Inhalte

the specific contend is defined by the individually selected internship or semester abroad.

In general the internship semester gives students insight in their future work by joining an internship in a company in the textile and clothing industry. The employability is improved by practicing the knowledge and skills learned in the study courses in an industrial environment.

After the end of the internship the students have to handout a written report to the university's supervisor. It includes a description of the work done in the internship as well as a personal resume.

As an alternative to the internship the students may do a semester abroad at a foreign university. This will improve significantly their language skills, intercultural competences as well as specific knowledge. Students have to pass at least a volume of 20 Credit Points at the foreign university. In addition they have to handout a written report to the university's supervisor. It includes a description of the joined courses as well as a personal resume

### Literatur

according to the individual internship or semester abroad

Modul **TCM-230: Marketing**

Sprache Englisch

Verantwortlich Prof. Dr. Susanne Müller

Arbeitsbelastung SWS 4 ECTS 5

60h Präsenz

43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)

22h Prüfungsvorbereitung

#### Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Marketing	4	5	4	0	0	0	4
Lehrende/r:	Prof. Dr. Müller, Susanne							
Voraussetzung:								

#### Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-230	Marketing	Pr	Klausur

#### Anmerkung



Große Veränderungen mit enormen wirtschaftlichen und sozialen Herausforderungen prägen das 21. Jahrhundert. Daraus ergeben sich große globale Marktchancen für die Fashion-Industrie. Ausgehend von den Bedürfnissen der Fashion-Konsumenten müssen heute Fashion-Produkte zeitgenau angeboten werden, damit die Unternehmen vor dem Hintergrund der Fast-Fashion noch existieren können. Des Weiteren müssen neben den Heimatmärkten auch globale Märkte gefunden werden, um einen Ausgleich zu den gesättigten heimischen Konsumenten zu finden.

In der 4 stündigen Veranstaltung "Marketing" werden zunächst diese neuen Marktherausforderungen in diversen Case Studies erarbeitet, um daraus dann die richtigen Konzepte für zukünftigen Marketingstrategien zu entwickeln.

Dabei werden neben den klassischen, traditionellen Marketinginstrumenten auch Schwerpunkte gelegt auf die neuen Möglichkeiten, die sich durch die Nutzung von Social Media Marketing für die Fashion-Unternehmen ergeben. Hierzu wird ebenfalls auf Basis diverser Case Studies Problemansätze und Lösungsmöglichkeiten erarbeitet.

Tremendous changes with enormous economical and social challenges describe the 21st century.

The result are big global market potentials for the fashion industry.

Depending on the desires of the fashion consumers, today's fashion products have to be offered fast.

This makes it possible that the fashion companies in the age of fast fashion are able to compete.

Besides the domestic markets there have to be found and conquered global markets to compensate the satisfied domestic consumers.

In the 4 hours weekly lecture "Marketing" these new market challenges are described in several case studies.

On their basis, new marketing concepts will be developed with the help of the traditional marketing tools

as well as with the Social Media Marketing tools.

With the help of additional case studies, solutions will be found.

Marketing:

- Marketing Umgebung ,
  - Globale Märkte,
  - Marktsegmentierung und Positionierung,
  - Customer relationship management,
  - Wettbewerbsvorteile,
  - Markenpolitik und Verpackung,
  - Produktentwicklung,
  - Produktlebenszyklus-Analysen,
  - Kontrahierungspolitik,
  - Distributionspolitik.
- 
- Marketing environment and global marketplace,
  - Market segmentation, targeting and positioning,
  - Building customer relationships,
  - Creating competitive advantages,
  - Brands, products, packaging,
  - Product development and life-cycle-strategies,
  - Pricing considerations and approaches,
  - Pricing strategies.

## Marketing

### Inhalte

- Marketing Umgebung
  - Globale Märkte
  - Marktsegmentierung und Positionierung
  - Customer relationship management
  - Wettbewerbsvorteile
  - Markenpolitik und Verpackung
  - Produktentwicklung
  - Produktlebenszyklus-Analysen
  - Kontrahierungspolitik
  - Distributionspolit
  - Social Media Marketing
- 
- Marketing environment and global marketplace
  - Market segmentation, targeting and positioning
  - Building customer relationships
  - Creating competitive advantages
  - Brands, products, packaging
  - Product development and life-cycle-strategies
  - Pricing considerations and approaches
  - Pricing strateies
  - Social Media Marketing

### Literatur

Kotler, Philip: Principles ofMarketing.  
Berkowics, E.: Marketing. Irwin McGraw-Hill, ISBN 0-07-365645-3  
Kotabe,M.; Helsen,K.: Global Marketing Management, Wiley, ISBN 0-471-23062-6  
Boone,L.; Kurtz,D.: Conntemporary Business, Harcourt College Publishers ISBN 0-03-033226-5  
Streibel, B.: The manager ´s guide to effective meetings, McGraw-Hill, ISBN 0-07-139134-7

**Modul TCM-240: Printing**

Sprache Englisch  
Verantwortlich Prof. Dr. Mathias Muth  
Arbeitsbelastung SWS 4 ECTS 5  
60h Präsenz  
43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
22h Prüfungsvorbereitung

**Lehrveranstaltungen**

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Digital Printing	4	5	4	0	0	0	4
Lehrende/r:	Prof. Dr. Muth, Mathias							
Voraussetzung:								

**Prüfungen**

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-240	Digital Printing	Pr	Klausur

**Anmerkung**

## Übergreifende Modulziele

The students know the basic technologies of textile printing. They are able to compare the different printing processes and they are competent to select adequate printing systems, dyestuffs, auxiliaries textile substrates for different applications.

The knowledge of selecting the appropriate procedures for the most important fibres such as cotton, viscose, wool as natural fibres and polyamide, polyester, polyacrylics and elastic fibres will be taught. By learning quality assessment procedures the students will be able to identify possibilities and limitations of textile printing technologies.

## Digital Printing

### Inhalte

- Basics of Digital Textile Printing
- Definitions
- History
- Market data
- Trends and perspectives
- General principles and requirements on textile substrates
- Pretreatment
- Coating
- Fixation
- Aftertreatment
- Inks for digital textile printing
- Requirements on water-based inks
- Dye-based vs. pigment inks
- InkJet Technology
- Drop-On-Demand vs. Continuous InkJet
- Print heads
  - Piezo
  - Bubble Jet
  - Valve Jet
- Basics in Colour Management Software
- RIP
- Subtractive colouration
- Advantages vs. disadvantages of digital textile printing
- Ecological aspects of digital textile printing

### Literatur

Digital Textile, different issues, World Textile Information Network  
H. Ujiie: Digital Printing of Textiles, Woodhead Publishing, 2006  
Ch. Cie: InkJet Textile Printing, Woodhead Publishing, 2015  
H.-K. Rouette: Enzyklopädie Textilveredlung, Deutscher Fachverlag, 2008

Modul **TCM-250: Supply Chain Management**

Sprache Englisch  
 Verantwortlich Prof. Dr. Markus Muschkiet  
 Arbeitsbelastung SWS 4 ECTS 5  
 60h Präsenz  
 43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
 22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Logistics	2	3	2	0	0	0	4
Lehrende/r:	Prof. Dr. Muschkiet, Markus							
Voraussetzung:								
Bezeichnung:	Fashion Retailing	2	2	2	0	0	0	4
Lehrende/r:	Prof. Dr. Heinemann, Gerrit							
Voraussetzung:								

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-250	Supply Chain Management	Pr	Klausur

Anmerkung

## Übergreifende Modulziele

Students are able to evaluate different Supply Chain Management (SCM) strategies and approaches. They should be also able to succeed in SCM projects with interdisciplinary teams in their professional life.

## Logistics

### Inhalte

In the lecture Logistics the basics of the different logistics areas are taught. In the first part the focus will be on intralogistics with its material flow and storage techniques. In particular, systems of textile and clothing logistics, such as conveyor systems for hanging goods and (automated) storage systems. In the second part the transport and traffic logistics are considered. Those parts cover the basic transportation, transshipment and warehouse processes of logistics. In addition, the interfaces between these processes and applied methods are taken up and illustrated by examples. The aim is to communicate the general logistical foundations in combination with a deepening aspect of the textile and clothing industry / logistics.

### Literatur

Muschkiet , M.: Logistics, script of lecture

## Fashion Retailing

### Inhalte

- Fashion Retailing Today - Facts and Figures
- Formats in Retailing - How to Structure Fashion Retailing
- New Forms of Fashion Retailing: Offline, Online, No-Line
- Online Fashion Retailing: Specifics, Demands, Best Practices
- Format Positioning in Fashion Retailing
- Verticalisation in Fashion Retailing
- Internationalisation in Fashion Retailing
- Buying and Inventory Management
- Marketing and Sales in Fashion Retailing
- Category Management in Fashion Retailing - Demand Side
- Logistics and Supply Chain Management in Fashion Retailing - Supply Side
- Logistics and Physical Distribution
- E-Procurement and Automation

### Literatur

#### Literature

Zentes, J.; Morschett, D.; Schramm-Klein, H. (2016). Strategic Retail Management, Springer-Gabler. Wiesbaden.

Kubel, H.; Williams, S. (2015). Marketing Fashion: Strategy, Branding and promotion. Harrier Posner.

Heinemann, G.; Gaiser, C. (2015). Social, Local, Mobile: The Future of Location-based Shopping. Berlin.

Koumbis, D. (2014). Fashion Retailing. From Managing to Merchandising (Best Practice Management). Bloomsbury.

Heinemann, G.; Schwarzl, C. (2010): New Online-Retailing - Innovation and Transformation. Wiesbaden.

Diamond, Ellen (2006): Fashion Retailing - A Multi-Channel-Approach

Saviolo, Stefania, Testa, Salvo, Strategic Management in the Fashion Companies, Etas, Milano 2002

McGoldrick, Peter J., Davies, Gary, International Retailing -

Trends and Strategies, Pitman Publishing, London, 1995

Heinemann, Gerrit (2008): Multi-Channel-Handel - Erfolgsfaktoren und Best Practices

Ahlert, Dieter/ Große-Bölting, Kristin/ Heinemann, Gerrit (2009): Handelsmanagement in der

Textilwirtschaft - Einzelhandel und Wertschöpfungspartnerschaften

Modul **TCM-260: Human Resources Management**

Sprache Englisch  
Verantwortlich Prof. Dr. Walter Harsch  
Arbeitsbelastung SWS 4 ECTS 5  
60h Präsenz  
43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Human Resources Management	4	5	4	0	0	0	4
Lehrende/r:	Prof. Dr. Harsch, Walter							
Voraussetzung:	None							

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-260	Human Resources Management	Pr	Klausur

Anmerkung



## Übergreifende Modulziele

Companies are successful if their employees are successful. The selection, qualification, and development of the staff are main targets to ensure the economy of companies and the human design of industrial work.

Students get an overview about important aspects of human resources, that lead to highly motivated and qualified employees and therefore to successful companies. They know about instruments, concepts and proceedings to find out about potential weak spots in organizational behaviour as well as to improve situations. This enables them to develop and introduce future-orientated solutions in industry.

## Human Resources Management

### Inhalte

- Overview about the different fields of Human Resources
- Leadership styles and necessary leadership competencies
- Motivational theories and their transfer in real leadership systems
- Negotiations
- Personnel Time Management
- Job applications and job interviews
- Quantitative and qualitative personnel planning
- Intercultural aspects in Human Resources
- Continuous Improvement Process (CIP)
- Basic forms of classic and "modern" remuneration systems
- Assessment Centres
- Generation Y

### Literatur

Bröckermann, R.: Personalwirtschaft. Stuttgart. 2. Auflage 2001.  
Olfert, K.; Steinbuch, P. A.: Personalwirtschaft. Ludwigshafen (Rhein), 9. Auflage, 2001  
Blom, H.; Meier, H. (Hrsg.): Interkulturelles Management. Herne, Berlin, 2002  
Heß, M.: TQM/KAIZEN-Praxisbuch. Verlag TÜV Rheinland, 1994  
Harsch, W.: Manuscript, version of the relevant semester.  
Hindle, T.: Manage your time. London, New York, Sydney, Moscow, 1998  
Dixon, R.: Management theory and practise made simple. Oxford, 1991  
Straw, A.; Shapiro, M.: Succeeding at interviews in a week. Oxon, 2nd Edition, 1998  
Eggert, M.: The perfect CV. London, 1994.

**Modul TCM-270: Ergonomics**

Sprache Englisch  
Verantwortlich Prof. Dr. Walter Harsch  
Arbeitsbelastung SWS 4 ECTS 5  
60h Präsenz  
43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
22h Prüfungsvorbereitung

**Lehrveranstaltungen**

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Ergonomics	4	5	4	0	0	0	5
Lehrende/r:	Prof. Dr. Harsch, Walter							
Voraussetzung:	None							

**Prüfungen**

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-270	Ergonomics	Pr	Klausur

**Anmerkung**

## Übergreifende Modulziele

The design and continuous optimization of the work processes are main targets to ensure the economy of companies and the human design of industrial work.

Students therefore know essential elements how to organize work and design it in detail. They are able to analyze and optimize work systems and to assess consequences of unfavorable and improved work processes. Such knowledge about the correct use of manpower enables the students to support the future viability of companies.

## Ergonomics

### Inhalte

- Objectives and contents of ergonomics
- Evaluation levels of work processes
- Physiological and anthropometric aspects of work design
- Calculation of maximum permitted workloads
- Design of work methods according to the rules of motion economy, motion simplification and motion intensification
- Time data methods
- Methods Time Measurement (MTM)
- Groups
- Motivational theories
- Basic forms of work structuring
- Context between legal, tariff and in-house regulations of work
- Working time, breaks, flex time, shift work
- Environmental conditions (e.g. illumination, noise)
- Evaluation of work systems

### Literatur

- Hammer, W.: Wörterbuch der Arbeitswissenschaft. München, 1997.
- Hettinger, T.; Wobbe, G. (Hrsg.): Kompendium der Arbeitswissenschaft. Ludwigshafen (Rhein), 1993.
- Harsch, W.: Manuscript, version of the relevant semester.
- Dixon, R.: Management theory and practise made simple. Oxford, 1991.
- Kroemer, K. H. E.; Kroemer, K. H., Kroemer, H. E.: Fitting the Task to the Human, Fifth Edition: A Textbook of Occupational Ergonomics. Crc Pr Inc, 5. Auflage 1997.

Modul **TCM-280: Organisation and Controlling**

Sprache Englisch  
Verantwortlich Prof. Dr. Gerrit Heinemann  
Arbeitsbelastung SWS 4 ECTS 5  
60h Präsenz  
43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Organisation	2	3	2	0	0	0	4
Lehrende/r:	Prof. Dr. Heinemann, Gerrit							
Voraussetzung:	English							
Bezeichnung:	Controlling	2	2	2	0	0	0	4
Lehrende/r:	Prof. Dr. Schlick, Uwe							
Voraussetzung:								

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-280	Organisation and Controlling	Pr	Klausur

Anmerkung

Organisation and Controlling are main success factors in management. Especially for textile- and fashion enterprises, which are leading examples for other industries due to all restructuring topics, they are key issue. The structural change of the last decades could have only be managed on the basis of adequate organisational tools. It's all about structural change management and also optimisation of processes. This is the reason, why pure verticals like H&M and also inditex are so successful. They are the most successfull fashion companies in the world and example for other industries. Students have to understand the opportunity of organisational reinventions. They need basic knowledge of business- and process organization. They also should be able to control changes and companies. That's why controlling and modern controlling methods have also a key role in modern management. The students should know the tasks of Controlling as Top-Management function.

After their study students are able to differentiate the functional and institutional aspects of Corporate Controlling. They know the tasks of Strategic Controlling, can explain the instruments of Strategic Controlling (g.e. Gap-, Portfolio- and LC-Analysis) and are able to use them in excercises. Students know the tasks of Operative Controlling, can explain the instruments of operative Controlling (g.e. ratios, margin- and effectivity-measurement) and are able to use them in excercises. They know the most important KPI's like ROCE and understand the interdependencies of the main key figures.

The students are also able to categorize principle terms of Business Organisation. They understand first terms of Organizational Sciences, show understanding for Business Processes, achieve a broad view about the relevant issues of Organizational Sciences, know the relevant terms of Organizational Sciences and know the differences between Structual Organisation and Process Organization. They also can describe the relevant forms of Primary Organization and Secondary Organization, know the advantages of different forms of structural Organisation and can repeat the main areas of working organisation. The student also know the basics and objectives of process organisation. They understand the difference and relationship of structural and process organisation. The students get an overview of central applications of process organisation and know the main specifics of process organisation in manufacturing. They understand, which methods are used in process organisation. They can describe the basics and characteristics of process organisation, understand the development and optimisation of business processes and their external linkages. The students are able to differentiate the traditional value chain and the virtual value chain.

## Organisation

### Inhalte

#### BUSINESS ORGANISATION

- Purpose and Motives of Organisation
- Objectives of Organisation and Companies for Organisation
- Interrelation between Business and Process-Organisation
- Job Development and Job Filling
- Structural Principles and Hierarchies
- Forms of Primary Organisation in Business Organisation + Case Study
- Forms of Secondary Organisation in Business Organisation + Case Study
- Delegation and Leadership + Case Study
- Structure follows strategy

#### PROCESS ORGANISATION IN MANUFACTURING

- Value Chain Concept - 90°-Shift of the Organisation
- Objectives of Process Organisation
- Areas of Manufacturing-Organisation
- Workshop-Manufacturing versus Assembly-Line-Manufacturing
- PPS-Production-Planning-Systems
- Manufacturing 4.0 - FMC-Flexible-Manufacturing and CIM-Computer Integrated Manufacturing
- Team-Organisation in Manufacturing
- Total-Quality-Management
- Material-Management and Inhouse Logistics

### Literatur

#### Literature

Karms, M. P.; Mingst, K. A. (2015). International Organizations. The Politics and Processes of Global Governance.

Robertson, B. J. (2016): Holacracy: A Revolutionary Management System that Abolishes Hierachy. Henry Holt.

Laloux, F. (2014).Reinventing Organizations: A Guide to Creating Organizations Inspired by the Next Stage in Human Consciousness. Nelson Parker.

Galbrath, J. R. (2014). Designing Organizations. Strategy, Structure, and Process at thze Business Unit and Enterprise Levels. Jossey-Bass.

Hemes, T. (2014). A Process Theory of Organisation. Oxford.

Dankbaar, Ben (Hrsg.), Perspectives in industrial organizations, Kluwer Acad. Publ., last edition

Robbins, Stephen P., Organization theory : structure, design, and applications., last edition

# Controlling

## Inhalte

### Content

#### Definition of Controlling

- functions/tasks of controlling
- controlling within the organisation
- self-understanding of controlling
- perspectives of controlling

#### Information supply in controlling

- information supply by financial accounting
- information supply by cost accounting
- information supply by management reporting
- key performance indicators

#### Strategic Controlling

- the strategic management process
  - vision-/mission-definition
  - setting objectives
  - crafting and formulation of the strategy
  - implementing and evaluating of the strategy
- instruments and methods of strategic controlling
  - szenario analysis
  - lifecycle analysis
  - portfolio analysis
  - swot-analysis
  - competitive advantage analysis
  - gap analysis

#### Operational Controlling

- profit planning
- the profit wheel
- the cash wheel
- the roe wheel

#### Functional Controlling

- supply chain controlling
- production controlling
- marketing controlling
- sales & services controlling

## Literatur

Bangs, David: Controlling Cash Flow, Boston 1989

Finlay, Paul: Strategic Management, an introduction to Business and Corporate Strategy, Harlow 2000

Krause, Hans-Ulrich/Dayanand, Arora: Controlling-Kennzahlen - Key Performance Indicators, München 2008

Simons, Robert: Performance Measurement & Control Systems for Implementing Strategy, New Jersey 2000

Weber Jürgen/Schäffer, Utz: Introduction to Controlling, Stuttgart 2008

Modul **TCM-290: Production Engineering**

Sprache Englisch  
Verantwortlich Prof. Mathias Paas  
Arbeitsbelastung SWS 4 ECTS 5  
60h Präsenz  
43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Clothing Production Engineering	4	5	4	0	0	0	4
Lehrende/r:	Prof. Paas, Mathias							
Voraussetzung:								

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-290	Clothing Production Engineering	Pr	Klausur

Anmerkung



## Übergreifende Modulziele

Students get confronted with relevant manufacturing steps in processing sewn or welded products like garments, seats or technical textiles etc..

Starting from the definition of requirements for all kind of trimmings and fabrics to spreading and cutting, followed by fusing-, joining-, shaping- and finishing techniques will get introduced and discussed.

Students should be able to choose the optimum techniques in processing according to the needs of a product or article.

They get enabled to evaluate various manufacturing techniques according to the size of production sites as well as to technology level of probable production countries.

Based on standard products like Jeans or T-shirts different options in manufacturing get introduced and students can evaluate and choose best techniques as well as machinery as well as working methods.

Principles in organizing productions flow are taken to demonstrate e.g. single or bundle production.

# Clothing Production Engineering

## Inhalte

### Übergreifende Modulziele / Learning Outcomes

Den Studierenden werden umfassende theoretische und praktische Kenntnisse und Fertigkeiten beim Einsatz und Umgang mit Bekleidungsmaschinen und bei der Herstellung von Bekleidung, Heimtextilien und technischen Textilien vermittelt, die unverzichtbarer Bestandteil der Arbeits- und Tätigkeitsfelder von Führungskräften in der Konfektion sind.

Die Studierenden lernen Verfahrenstechniken und Maschinen der Konfektion kennen und anwenden. Die Funktions- und Wirkungsweisen der Maschinen und deren Einsatz bei der Herstellung textiler Produkte werden im praktischen Teil der Veranstaltung vermittelt und erlernt. Aus diesem Wissen und den Anwendungen können die Studierenden maschinentechnische und verfahrenstechnische Anwendungen rationell planen und in der Praxis einsetzen. Dies wird bei der Herstellung verschiedener Produkte (Jeans, Hemd) exemplarisch erprobt.

Students will get comprehensive theoretical and practical knowledge in use and application of clothing machinery and with manufacturing of clothing textiles, home textiles and technical textiles which is an essential field of activity of executive staff in the clothing industry.

The students learn to understand and apply processes and machinery in the clothing industry. The functions and structures of the machinery and their application in manufacturing of textile products will be studied in practical training. This knowledge and experiences allows students to plan efficient machine and process technological applications. This will be practical trained with manufacture of different products (jeans, shirts).

### Modulinhalte / Contents

#### Bekleidungsmaschinen (Clothing Production Machinery)

- Einführung: Bedeutung der Bekleidungs- und Bekleidungs-maschinenindustrie
- Maschinenelemente
- Legeverfahren und -maschinen
- Schneideverfahren und -maschinen
- Einrichtung
- Nähmaschinen: Klassifikation, Standardnähmaschinen, Nähautomaten, Nähanlagen, Zubehör
- Schweissverfahren und -maschinen
- Fixierverfahren und -maschinen
- Bügel- und Finishverfahren und -maschinen
- Forschung und Entwicklung
  
- Introduction: means of the clothing industry, machinery in clothing manufacturing
- Clothing machinery elements
- Spreading methods and machinery
- Cutting methods and machinery
- Preparation of cut work for sewing
- Sewing machinery: classification, basic sewing machinery types, simple automatics, automated workstations, associated work aids
- Welding methods and machinery
- Fusing methods and machinery
- Pressing and related garment finishing: methods and machinery
- Research and development

## Fertigungsverfahren (Clothing Production Engineering):

- Einführung: Bedeutung der Bekleidungsindustrie und anderer konfektionierender Sparten
  - Materialhandhabung und Legeverfahren
  - Schneide- und Trennverfahren
  - Einrichtung für die Näherei
  - Fügetechnologien spez. der Näherei, Nahtarten, Stichtypen, Handling und Automationsansätze, Hilfsmittel und Arbeitsplatzgestaltung
  - Schweiß- und Klebeverfahren
  - Fixier- und Laminierverfahren
  - Bügel- und Finishverfahren
  - Praktische Erprobung bei der Fertigung eines Herrenhemdes
  - Forschung und Entwicklung
- 
- Introduction: means of the clothing industry, technical sewn products etc.
  - Fabric handling and spreading methods
  - Cutting-, welding and other separating methods
  - Preparation of cut work for sewing
  - Joining technologies esp. sewing, seamtypes, basic stitch types, material-handling and automation workstations, associated work aids
  - Welding and glueing methods
  - Fusing and laminating methods
  - Pressing and related garment finishing: methods
  - Manufacturing of a man's shirt in practice
  - Research and development

## Literatur

Clothing technology, Europa Lehrmittel Verlag

Modul **TCM-300: Advanced Product Engineering**

Sprache Englisch  
Verantwortlich Prof. Mathias Paas  
Arbeitsbelastung SWS 4 ECTS 5  
60h Präsenz  
43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Advanced Product Engineering	4	5	2	0	2	0	5
Lehrende/r:	Prof. Paas, Mathias							
Voraussetzung:	Clothing production engineering							

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-300	Advanced Product Engineering	Pr	Klausur

Anmerkung

## Übergreifende Modulziele

Students get confronted with relevant manufacturing steps in processing sewn or welded products like garments, seats or technical textiles etc.

Starting from the definition of requirements of operations in the sewing industry based on work science related checklists students will get enabled to choose the right operator to a relevant operation.

Workplace layout as well as working methods are discussed and improved.

Basics in Work science systems like REFA and MTM are given and students should know the instruments to control production efficiency as well as product quality.

Students should be able to choose the optimum techniques in processing according to the needs of a product or article to achieve productivity as well as product quality.

## Advanced Product Engineering

### Inhalte

#### Learning Outcomes

Students therefore learn:

- an overview about the departments of product- development today.
- the history an the future for this departments.
- the different kind of working in these departments.
- product- development in foreign countries.

In an exemplary fashion is to work from idea until the production  
Contents

CAD 2D/3D Bekleidungskonstruktion (CAD 2D/3D Clothing Construction):

- 3D - Modelltheorie
- Zusammenhänge zwischen 2D- und 3D- Bekleidungskonstruktion
- Menschmodelle
- 3D- Simulation von Bekleidung
- 3D- Präsentation von Bekleidung
  
- 3D- model theorie
- Relations between 2D and 3D design
- Avatars
- 3D simulation of clothing
- 3D presentation of clothing

Produktentwicklung und Prozessdesign (Produkt Development Process Design):

- Definition Prozessdesign
- Abteilungen: Design
  - Modellmacher
  - Gradierung
  - Lagenleger
  - Arbeitsvorbereitung
  - Passive Lohnveredlung
  - Vollkauf
  - Projektmanagement
  - Produktabnahme
  
- Definition process design
- Departments of:
  - Design
  - Patternmaking
  - Grading
  - Lay planning
  - Work process preparing
  - Cut make and finishing
  - Fullbuy (whole sales)
  - Check the product

Advanced Product Engineering:

Students get introduced in the product development processes. The involvemet of Operators, Machinery, Method of manufacturing as well as Quality requirements are demonstrated. Techniques to determine

optimal product engineering will be shown.

- Overview in manufacturing techniques
- Systematical comparon of manufacturing techniques based on Jeans-production reflecting other related products
- Work and time studies
- Cost calculation of sewn products from fabric costs to final sales price at POS
- Checklists for improvement of Workplaces in sewing industries as well as sewing methods
- Operators testing, Standard test: skills and abilities
- Operators training programs
- Define Quality aspects of sewn products and start Quality descriptions later used in Quality manuals
- Practical exercises

## Literatur

Eignungstest für Näherinnen, BTI e.V. Mönchengladbach  
Lehrunterlage für Ausbilder von Näherinnen  
Clothing technology, Europa Lehrmittel Verlag

Modul **TCM-310: Clothing Production**

Sprache Englisch

Verantwortlich Prof. Dr. Kerstin Zöll

Arbeitsbelastung SWS 4 ECTS 5

60h Präsenz

43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)

22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Clothing Production Machinery	2	3	2	0	0	0	5
Lehrende/r:	Prof. Dr. Zöll, Kerstin							
Voraussetzung:								
Bezeichnung:	Clothing Production Practical Training	2	2	0	0	0	2	4
Lehrende/r:	Prof. Paas, Mathias							
Voraussetzung:								

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-311	Clothing Production Machinery	Pr	Klausur
TCM-312	Clothing Production Practical Training	T	Testat

Anmerkung



## Übergreifende Modulziele

The students will get comprehensive theoretical and practical knowledge in use and application of clothing machinery and with manufacturing of clothing textiles, home textiles and technical textiles which is an essential field of activity of executive staff in the clothing industry.

The students learn to understand and apply processes and machinery in the clothing industry. The functions and structures of the machinery and their application in manufacturing of textile products will be studied in practical training. This knowledge and experiences allows students to plan efficient machine and process technological applications. This will be practical trained with manufacture of different products (e.g. shirts, trousers).

## Clothing Production Machinery

### Inhalte

#### Clothing Production Machinery

- Introduction: Clothing manufacturing / clothing engineering: facts and figures
- Spreading technology and machinery
- Traditional and automatic cutting machinery
- Sewing machinery: classification, sewing machines for the different stitch types, sewing tools, stitch formation process, feeding systems, automation, quality recommendations
- Alternative joining technologies
- Research and development

### Literatur

A detailed script is offered.

Tyler/Carr & Latham's: Technology of Clothing Manufacture, Blackwell Science, 2000

Amann Group: Focus Sewing and Embroidering threads I and II

Ferd. Schmetz GmbH: Guide of sewing technique, Herzogenrath 2015

Due to the nature of the content reading is done with free available sources in the internet.

## Clothing Production Practical Training

### Inhalte

Fertigungsverfahren Praxis (Clothing Production, Practical Training)

Sicherheitsunterweisung für Arbeiten in den Konfektionstechnischen Laboren, Bedienungsunterweisung an produktionsnotwendigen Maschinen und Anlagen.

Im Zuge der praktischen Übungen wird am Beispiel eines Basisproduktes ( Jeans, Hemd ) der Maschinen- und Verfahrenseinsatz praktisch erprobt und angewendet.

General Safety-instruction for the use of laboratory's machinery, General instruction in handling of machinery and equipment necessary to mak up a shirt.

Students will receive practical training in manufacturing laboratories. Lay-planning exercises, Cutting and laminating practical training as well as sewing and ironing exercises while doing an own shirt. Exercises will get introduced be video film sequences.

### Literatur

Shirt making operations on Youtube

Shirtmaking video published by Dürkopp-Adler Comp., Bielefeld

Shirtmaking operations on video by Hochschule Niederrhein (not open for public use)

Modul **TCM-320: Clothing Construction**

Sprache Englisch

Verantwortlich Prof. Dr. Michael Ernst

Arbeitsbelastung SWS 4 ECTS 5

60h Präsenz

43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)

22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	CAD 2D/3D Clothing Construction	2	3	0	0	2	0	5
Lehrende/r:	Prof. Dr. Ernst, Michael							
Voraussetzung:								
Bezeichnung:	Product Development Process Design	2	2	2	0	0	0	4
Lehrende/r:	Prof. Dr. Ernst, Michael							
Voraussetzung:								

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-321	CAD 2D/3D Clothing Construction	Pr	Computer
TCM-322	Product Development Process Design	Pr	Klausur

Anmerkung

## Übergreifende Modulziele

Students get a deep understanding of product development in clothing industry, starting with a design idea and ending up with a finished product presented at POS. They learn about all the basic tools used in industry to handle this process along the product development chain. A main focus is on digital pattern making resulting in getting fundamental knowledge in this field with regard to future concepts in simulation technology. This comes together with gaining manufacturing skills to build up expertise and to be skilled in analysing existing and developing new process ideas for clothing industry.

## CAD 2D/3D Clothing Construction

### Inhalte

- Basics of 2D-3D prototyping
- Overview 2D-3D CAD software, virtual stitching, flattening
- Introduction to a selected 2D program
- Introduction to a selected 3D program
- Building up basic blocks, styles and models
- Virtual fit control of basic blocks
- Virtual Prototyping- stylistic and technical
- Virtual product development 2D-3D-2D
- Generation of scanatars and import of scanatars
- Rendering methods for product presentation

### Literatur

Beazley, A.: Computer-Aided Pattern Design & Product Development; ISBN-13: 978-1-405-10283-4  
Stott, M.: Pattern Cutting for Clothing Using CAD; ISBN-13: 978-0-857-09231-1

## Product Development Process Design

### Inhalte

- Definition of product development
- Diversity of process types for product development with outsourced process steps
- Process dependant tasks of design and pattern departments, stylistic and technical product development, work process planning
- Implementation of agencies and suppliers overseas
- Quality consistency in product development process
- Manufacturing and quality check of products
- Real versus virtual product development
- Virtual prototyping and product development based on avatars, scanatars and statistical avatars
- Importance of sizing systems, sizing and fit, international sizing, body measurement charts and ready measurement charts, grading tables
- Examples of product development based on requirement profiles: women's outer garment, outdoor, workwear, protection suits

### Literatur

- Ulrich, K.T.: Product Design and Development; ISBN-13: 978-0-070-65811-0
- Gardetti, M. A.: Sustainable Management of Luxury (Environmental Footprints and Eco-design of Products and Processes); ISBN-13: 978-9-811-02916-5
- Keiser, S. J.: Beyond Design: The Synergy of Apparel Product Development; ISBN-13: 978-1-609-01226-7
- Lee, J.: Technical Sourcebook for Designers; ISBN-13: 978-1-501-39537-6
- Johnson, M. J.: Apparel Product Development; ISBN-13: 978-0-130-25439-9
- Winfried, A.: Metric Pattern Cutting for Women's Wear; ISBN-13: 978-1-444-33505-7
- Jeffrey, M.: Costing for the Fashion Industry; ISBN-13: 978-1-847-88259-2
- Szkutnicka; B.: Flats: Technical Drawing for Fashion; ISBN-13: 978-1-856-69618-0
- Ashdown, S.: Sizing in Clothing; ISBN-13: 978-1-845-69034-2

Modul **TCM-330: Product Planning**

Sprache Englisch

Verantwortlich Prof. Ute Detering-Koll

Arbeitsbelastung SWS 4 ECTS 5

60h Präsenz

43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)

22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Product Data Management	2	2	2	0	0	0	5
Lehrende/r:	Prof. Detering-Koll, Ute							
Voraussetzung:								
Bezeichnung:	Production Planning and Control	2	3	2	0	0	0	5
Lehrende/r:	Prof. Dr. Muschkiet, Markus							
Voraussetzung:								

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-330	Product Planning	Pr	Klausur

Anmerkung

## Übergreifende Modulziele

In times of global markets and production the modul Product Planning gives a branch-neutral overview of theoretical basics for Product Data Management (PDM) and Production Planning and Control (PPC). Thus the students understand PDM as an integrated, structured and consistent administration of all data and documents which have to be generated, processed and passed on during the development of new or modification of existing products. In addition to that the students become acquainted with the dynamic view and integration of enhanced applications. Besides that, they are able to understand the prerequisites and procedures of enterprise implementation of PDM-Systems. In addition, the methodological and organizational measures as well as models of the PPC are discussed. These aspects will be combined with fundamental factors and trends affecting production companies and their production. The aim is to provide the basis for assessing PPC. Furthermore the processes upstream and downstream of the production process have an appropriate view in order to be able to classify the interfaces and influencing variables to production in general and PPC in particular.

## Product Data Management

### Inhalte

#### Introduction

- Current position vis-à-vis competitors
- New work techniques and structures
- Common initial position
- Definitions
- Historical development
- Product life cycle
- Value chain

#### Static Models - Product Models

- Data management
- Document management
- ERP couplings

#### Dynamic Models - Process Models

- Process Management (Workflow Management)
- Configuration Management (Lifecycle Management)

#### Comprehensive Models - Integration Models

- Engineering Warehouse (EW)
- Enterprise Application Integration (EAI)
- engineering Collaboration (eCol)
- Supply Chain Management (SCM)
- e-Commerce (eCom)

### Literatur

Eigner, M.; Stelzer, R.: Produktdatenmanagement-Systeme: Ein Leitfaden für Product Development und Life Cycle Management, Springer-Verlag Berlin Heidelberg, 2001

Schöttner, J.: Produktdatenmanagement in der Fertigungsindustrie: Prinzip, Konzepte, Strategien, Carl Hansa Verlag München Wien, 1999

Burdon, Rodger: PDM: Product Data Management, Resource Publishing USA, 2003

McIntosh, Kenneth G.: Engineering Data Management: A Guide to Successful Implementation, McGraw-Hill Book Company Europe Berkshire England, 1995

Saaksvuori, A.; Immonen, A.: Product Lifecycle Management, Springer-Verlag Berlin, Heidelberg, 2002

Ijioui, R.; Emmerich, H., Ceyp, M.: Strategies and Tactics in Supply Chain Event Management, Springer Verlag Berlin Heidelberg, 2008

Kulkarni, S.; Sharma, A.: Supply Chain Management: Creating Linkages for Faster Business Turnaround, Tata McGraw Hill Education Private Limited, 2004



## Production Planning and Control

### Inhalte

Within the lecture "Production Planning and Control" (PPC) methodological and organizational measures as well as models of the PPC are discussed. These aspects will be combined with fundamental factors and trends affecting production companies and their production. The aim is to provide the basis for assessing PPC. In addition, the processes upstream and downstream of the production process have an appropriate view in order to be able to classify the interfaces and influencing variables to production in general and PPC in particular.

The following topics are discussed:

- Product development
- Basics of PPS models with push and pull production
- Production program planning
- Forecasting
- MRP
- Lot size optimization and warehouse management
- Scheduling and capacity planning
- Production control
- The basics of supply chain management concepts

### Literatur

Muschkiet , M.: Production Planning and Control, script of lecture

Modul **TCM-340: Technical Textiles**

Sprache Englisch

Verantwortlich Prof. Dr. Anne Schwarz-Pfeiffer

Arbeitsbelastung SWS 4 ECTS 5

60h Präsenz

43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)

22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Manufacturing and Application of Technical Textiles 1	2	2	2	0	0	0	5
Lehrende/r:	Prof. Dr. Schwarz-Pfeiffer, Anne							
Voraussetzung:								
Bezeichnung:	Manufacturing and Application of Technical Textiles 2	2	3	2	0	0	0	5
Lehrende/r:	Lehrbeauftragte							
Voraussetzung:								

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-340	Technical Textiles	Pr	Klausur

Anmerkung

## Übergreifende Modulziele

Upon successful completion of the course students have a thorough and extensive expertise in developing and manufacturing technical textiles.

They overlook the materials and application fields of technical textiles.

For selected materials, students can analyze application scenarios and identify required properties of textile materials, and thus develop a specification list of technical textile products.

## Manufacturing and Application of Technical Textiles 1

### Inhalte

- Technical fibre and yarn production
  - Production
  - Characteristics
  - Application fields
- Production of knitted, woven and braided structures and nonwovens for technical applications
  - Technologies
  - Textile properties
  - Application areas
- Finishing of technical textiles
- Pattern making and confectioning of technical textiles
  - Sewing
  - Glueing
  - Welding
- Final products and their application scenarios

### Literatur

Editors: A. Richard Horrocks Subhash C. Anand, Handbook of Technical Textiles; 1st Edition; Woodhead Publishing, Cambridge, 2000

Gries, Veit, Wulfhorst: Textile Fertigungsverfahren - Eine Einführung , 2. Auflage, Hanser Verlag, München, 2014

Alagirusamy: Das, Technical Textile Yarns, Woodhead Publishing, Cambridge, 2010

Gulrajani: Advances in the Dyeing and Finishing of Technical Textiles

## Manufacturing and Application of Technical Textiles 2

### Inhalte

#### Car Technology

- Airbags
- Seat belts
- Tires
- Car interior
  - Seat covers
  - Head liner and door casings
  - Mouldings
    - Historical development
    - Fibers and processes in production
    - Components
    - Requirements and test methods

#### Architectural Textiles

- Historical development
- Fibers, fabrics, coatings
- Membrane components
- Architectural structures
- Properties
- Assembly

#### Geotextiles

- Historical development
- Definition of membranes
- Membrane functions
  - Mechanical
  - Hydraulic
- Membrane duties
  - Separation
  - Filtration
  - Drainage
  - Reinforcement
  - Erosion control
  - Sealing
  - Protection

### Literatur

Editors: A. Richard Horrocks Subhash C. Anand, Handbook of Technical Textiles; 1st Edition; Woodhead Publishing, Cambridge, 2000

Gries, Veit, Wulfhorst: Textile Fertigungsverfahren - Eine Einführung , 2. Auflage, Hanser Verlag, München, 2014

Alagirusamy: Das, Technical Textile Yarns, Woodhead Publishing, Cambridge, 2010

Gulrajani: Advances in the Dyeing and Finishing of Technical Textiles

Modul **TCM-350: Fabric Production**

Sprache Englisch

Verantwortlich Prof. Dr. Alexander Büsgen

Arbeitsbelastung SWS 4 ECTS 5

60h Präsenz

43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)

22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Weaving Processes	2	2	2	0	0	0	5
Lehrende/r:	Prof. Dr. Büsgen, Alexander							
Voraussetzung:								
Bezeichnung:	Narrow Fabrics	2	3	2	0	0	0	5
Lehrende/r:	Prof. Dr. Kyosev, Yordan							
Voraussetzung:								

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-350	Fabric Production	Pr	Klausur

Anmerkung

## Übergreifende Modulziele

Fabric Production is guiding students into detailed steps and processes for manufacturing of broad, narrow woven and braided products.

Students have well-grounded knowledge about all steps to manufacture a woven and braided fabrics. They are able to list and to explain all preparation processes, as well as all weaving and braiding machine functions like weft insertion, shedding, take-up. They can balance the advantages and disadvantages of all different process steps and they know the use of these methods in regard to used yarn material requirements and resulting quality of fabrics. Students are able to calculate and design woven and braided fabrics, in particular to calculate fabric areal resp. linear weight, cover factor and time of production.

## Weaving Processes

### Inhalte

1. Introduction, History
2. Winding
3. Twisting
4. Warping, Sectional Warping
5. Sizing
6. Drawing-in, Set-up
7. Shuttle Weft Insertion
8. Projectile Weft Insertion
9. Rapier Weft Insertion
10. Air-jet Weft Insertion
11. Shedding
12. Warp Let-off, Taking-up
13. Temples
14. Selvages

Calculation:

Fabric areal weight, yarn material requirement, time of production, weave coefficient/tightness Factor, cover factor

### Literatur

Adanur, S.:

Handbook of Weaving, Technomic Publishing Company, Lancaster PA 2001

Ormerod, A., Sondhelm, W.:

Weaving - Technology and Operations, The Textile Institute, Manchester 1996

Mohammed, Mansour:

Weaving: Conversion of Yarns to Fabric, Merrow Verlag, 1982

McGreith, Dan J.:

Weavers Handbook of Textile Calculations, Caroline Academic Press, Durham, North Carolina/USA, 2001

Booth, John Edward:

Textile Mathematics, Volume Three, p. 450 - 454, 1977, ISBN 090073924X

## Narrow Fabrics

### Inhalte

#### Introduction

- History of narrow fabrics
- Products, properties and applications of narrow fabrics

#### Narrow weaving:

- Machines for narrow weaving - shuttle and needle weaving
- Weaving systems (selvages)
- Special pattern of narrow weaving ("Rüschen", "Körperband", "falscher Atlas", pattern for selvages, hollow and half hollow selvages, elastic tapes)
- Multilayer tapes
- Weaving with two or more needles or shuttles , shedding (Low-Middle-High), control sequence

#### Braiding:

- Machines for braiding, track, take off
- Carrier construction
- Tubular, flat and form braiding
- Pattern in the braiding and relation between carrier occupation and braiding pattern
- Calculations for braiding

#### Pillow laces and rope production

### Literatur

Kyosev, Y., Skript Schmaltextilien

Kyosev, Y., Braiding technology for textiles, Woodhead Publishing, 2014

Kyosev, Y., (Ed.), Advances in the braiding technology, Woodhead Publishing, 2016

Essig, E., Nadel-Bandwebtechnik, Jakob Müller Institute of Narrow Fabrics, 2005

Kipp, H.-W.: Bandwebtechnik, JTM-Stiftung, Frick (Hrsg.), Verlag Sauerländer, Frankfurt a.M. 1998

Engels, H.: Flechttechnologie - Schmucktextilien - Technische Textilien, Arbeitgeberkreis

Gesamttextil/Industrieverband Deutscher Bandweber und Flechter e.V. (Hrsg.) Eschborn, 1996

Melliand Band- und Flechtindustrie / Euroseil Deutsche Seilerzeitung, Fachzeitschrift, Erscheinungsweise: vierteljährlich

Verlag Melliand Textilberichte, Deutscher Fachverlag GmbH

Atkins and Pearce Handbook of Industrial Braiding, F. Ko, C. Pastore, and A. Head, Atkins and Pearce, Covington KY, October, 1989

H A McKenna, J W S Hearle, N O'Hear, Handbook of fibre rope technology, Woodhead Publishing Limited

Modul **TCM-360: Textile Products**

Sprache Englisch  
Verantwortlich Prof. Andrea Rieschel  
Arbeitsbelastung SWS 4 ECTS 5  
60h Präsenz  
43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)  
22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Home Textiles	2	3	2	0	0	0	4
Lehrende/r:	Prof. Rieschel, Andrea							
Voraussetzung:	Weaving							
Bezeichnung:	Advanced Textile Products	2	3	2	0	0	0	4
Lehrende/r:	Prof. Rieschel, Andrea							
Voraussetzung:	Weaving							

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-360	Textile Products	Pr	Klausur

Anmerkung



## Übergreifende Modulziele

The lecture "Textile Products" deals with knowledges of fabrics for clothing and home textiles. The participants are able to recognize and analyse high class fabrics for clothing, recognize characteristics and risks of quality and assign them to their application. Analysis and assessment is practiced on basis of examples. Further technical construction and calculation of woven fabrics build a main part. The participants are enabled to produce a woven fabric according to specific requirements and to calculate all necessary production data like weavenotation, fabric balance, cover factor, weavingmachine arrangements, material calculation, and calculation of fabric area weight. Further the students work with the technology of multilayer and pile fabrics, carpet production and their typical qualities. The students are able to realize own construction principals. Analysis and assessment is practiced on basis of examples. A main part builds the special production process and machines of pile fabrics and carpets.

## Home Textiles

### Inhalte

In the lecture "Home Textiles" the students learn knowledge for special types of fabrics used in the sector of home textiles.

- Process of carpet production
- Wilton/ Brüssel, Aixminster
- Tufting
- Production upolstery and decoration fabrics
- Double layer
- "Scherli" fabrics
- Pile fabrics
- Cloquet fabrics
- Terry fabrics

### Literatur

Prof. Dipl.-Ing. A. Rieschel: Script of lecture, Hochschule Niederrhein, Mönchengladbach 2015  
Wilhelm Artz, Heimtextilien, Schiele & Schön Verlag, Berlin, 1970  
Suzanne Trocmé, Stoffe, Haupt Verlag, Bern, 2003  
Martin Kienbaum, Bindungstechnik der Gewebe II und III, Schiele & Schön Verlag, 1996  
Fischer/ Gürke-Lang/ Textile Bodenbeläge, F.C. Müller Verlag, Heidelberg, 2000  
Jack Lenor Larsen, Material Wealth, Abbeville Press, New York, 1989

## Advanced Textile Products

### Inhalte

Fundamentals in construction and quality of fabrics for clothing:

- weavenotation
- warp-/ weft count
- yarns, material
- fabric balance
- fabric analysis

Characteristics of fabrics

- construction
  - material and blends
  - comfort in wear, care properties
- Application of fabrics
- Calculation of fabric area weight
- Properties of woven fabrics
- Quality assessment
- Calculation of fabric construction and cover factor

### Literatur

Prof. Dipl.-Ing. A. Rieschel: Script of lecture, Hochschule Niederrhein, Mönchengladbach 2015

Grosicki, Z.: Watson's Advanced Textile Design, Newnes-Butterworths, London/Boston 1977

Robinson A.T.C., Marks R., Woven Cloth Construction, The Textile Institute, 1967

Adanur, S.: Handbook of Weaving, Technomic Publ. Company, Lancaster PA 2001

Ormerod A., Sondhelm, W.: Weaving - technology and operations, The Textile Institute, Manchester 1995

Modul **TCM-370: Design Theory**

Sprache Englisch

Verantwortlich Prof. Dr. Marina-Elena Wachs

Arbeitsbelastung SWS 4 ECTS 5

60h Präsenz

43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)

22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Design Theory	2	2	2	0	0	0	4
Lehrende/r:	Prof. Dr. Wachs, Marina-Elena							
Voraussetzung:								
Bezeichnung:	Colour Theory	2	3	2	0	0	0	4
Lehrende/r:	Prof. Dr. Wachs, Marina-Elena							
Voraussetzung:								

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-370	Design Theory	Pr	Klausur

Anmerkung

Borrowing the term from the English language the German Bauhaus formed our modern understanding of design. In the narrow and traditional sense of the word, design refers to an artistic form of industrial products and commodities which are designed appropriately to their material and use. Furthermore and in a more general sense, the term design refers to a concept designed to improve everyday life and industrial life. The latest definitions of designs are multifarious and are partly still developing. The word design is also being used in different new context, like for example of software-, skin- , and web design as well as since the 1980s for design management. In this context, design refers most often to the development of a project and its quality management. Hence, the students of Textile- and Clothing Management will encounter at least different areas of design during their studies which are dedicated to textile and fashion design in the traditional and professional sense of the word.

This involves the knowledge of history, theory and the developing of design concepts. The students will be able to understand the basic laws of visual perception and design and assess their professional applications.

The students know design dimensions and are able to differentiate design in its various dimensions: historical, aesthetic, psychological, product specific, process-oriented etc.

They have basic knowledge in the area of design processes and design methods and they are able to communicate respecting design contents in its correct technical language.

The seminar design theory and colour theory stands in relationship.

The students should know and to be able to analyse the determining factors of the colours in order to categorise them into different colour systems and to develop applicable criteria of colour evaluation which is important to read the symbolic meaning of design products. Beginning with the conditions within the laws of physics, light and colour and with different systems of mixing colour will be introduced. The perception of colour will be explained within the following categories: as the biological, physiological process of seeing and as the psychological process of perception. Subjective and objectifying perception will be discussed as a part of the phenomenology of perception as well as a part of cultural historical condition. Examples of colour design in the applied and fine arts will be examined and discussed.

The last phase of the lectures debates the cultural and historical conditions and forms of aesthetic perception. The lecture will be completed with practical work according to the theory of colour by Johannes Itten, which gives the students the possibility to analyse, to categorise and to evaluate determining factors in design applications. The students will use the knowledge of Gestalt parameters to communicate fashion - from point of view of creating info graphics until using graphical design elements and -laws of perception for exercise of transfer: to support marketing and promotion campaigns in the textile and clothing industries. Furthermore a design theoretical based consciousness for sustainable design products will be set the basics for on going seminars in higher semesters like fashion theory and multidimensional design as well for the master program.

## Design Theory

### Inhalte

- Introduction: What is Design?, What is good design? What is green design? -
  - What about green washing? and the responsibility of designer and design manager?
  - Design history and the benefit for innovative design for the future, Design Trends as determining factor - design strategies and unique selling points.
  - Perception and effects of CI and CD in three-dimensional ways, CF and functions of CF
  - Exercises: Process of Design, Interaction Design, Learning about material history (Industrialisation...) for tomorrow
  - Design Driven Innovation and other methods of design
  - Design Management in Design - especially Textiles Design
  - Theory of Design versus Sciences of Design
  - Scientific working in design, research and documentation in design
  - New materials, new methods, transfer
  - Interdisciplinary view on other cooperating disciplines
  - Intercultural perspective of design codes - the German Look compared to other country looks.
  - Design history of product design with a great holistic view
  - German Product Design in History and Organs in Design (Peter Behrens, Dieter Rams, Deutsche Werkbund, Rat für Formgebung, DGTF a.o.)
  - Design Seals and Awards (IF Design, Red Dot Design)
  - International Awards and Fashion/ Textile-Industry in case of sustainability
  - Design medias and The Medium is The Message (Marshall McLuhan)
  - Design is communicating, Transfer with exercises: as fashion journalist, fashion expert
  - Graphic Design as tool for design manager - Info graphics to storytelling
  - Visits of fairs - TechTextil Frankfurt, Orgatec Fair cologne, museums, DMI ...?
- it is up to the students interest and engagement
- Looking back on the seminar to prepare the examination - e.g. with the help of an exercise to Corporate Textiles I: Corporate Fashion - Design a Unisex-T-Shirt: 1. Looking back at the seminar: what is good design - how to communicate design expertise, 2. CI and CC of the University HN Fb 07, 3. New smart textiles 4. a claim to promote the textile and fashion competence, documentation and arguments/statement)

### Literatur

Selection of Literature: (please see the handset at the library at Mg)

English literature:

Conran Octopus and Design Museum, 2010, Fifty Dresses that changed the world, Octopusbooks UK.

Cosgrave, Bronwyn, 2000, The complete history of Costume & Fashion - from ancient egypt tot he present day, Checkmark Books, UK.

Gale, Colin and Kaur, Jasbir, 2002, The Textile Book, Oxford/New York: Berg.

Lee, Suzanne, 2005, Fashioning the Future - Tomorrow's Wardrobe, London: Thames & Hudson.

McQuaid, Matilda, 2005, Extreme Textiles. Designing for high performance, New York: Smithsonian Instiution in association with Cooper-Hewitt, National Design Museum.

Morrison, Jasper und Fukasawa, Naoto, 2007, Super Normal - Sensations of the Ordinary, Lars Müller Publishers.

O'Mahony, Marie und Sarah E. Braddock, 2002 Sportstech, London: Thames and Hudson.

Reed, Paula, 2012, Fifty Fashion Looks that changed the 1970s, Octopusbooks UK.

Sennett, Richard, 2008, The Craftsman, Yale University Press.

Zwimpfer, Moritz, 2001, 2d visual perception, Zürich: Niggli (german/english).

Literature Francaise:

Barthes, Roland, 1967, La Système de la Mode, Paris: Edition du Seuil.

Bordet, Pascale, 2010, cahiers secrets d'une costumière de théâtre, HC editions.

Jean Paul Gaultier, 2015, Katalog zur Ausstellung in Montréal, Kanada.

Barthes, Roland, 1970 (1967), Die Sprache der Mode, edition suhrkamp, 2. Aufl., Frankfurt am Main: Suhrkamp.

Böhn, Max von, 1986 (1976), Die Mode - Eine Kulturgeschichte vom Mittelalter bis zum Barock (Bd.1), 3. Überarbeitete Auflage von Ingrid Loschek, München: Bruckmann.

Böhn, Max von, 1986 (1976), Die Mode - Eine Kulturgeschichte Barock vom bis zum Jugendstil (Bd.2), 3. Überarbeitete Auflage von Ingrid Loschek, München: Bruckmann.

Eco, Umberto, 2002 (9.Aufl.), Wie man eine wissenschaftliche Abschlussarbeit schreibt, Heidelberg: C.F. Müller Verlag.

Garner, Philipp, 1996, sixties design, Köln: Taschen Verlag.

Heyden, A. von, Die Tracht der Kulturvölker Europas, vom Zeitalter Homers bis zum Beginne des XIX. Jahrhunderts, 1987: Reprint von Ausgabe 1889 Seemann Verlag, nach dem Exemplar der Universitätsbibliothek Leipzig, Wiesbaden: vma-Vertriebsgesellschaft.

Knecht, Petra (Hg.), 2003, Funktionstextilien. High-Tech-Produkte bei Bekleidung und Heimtextilien, Grundlagen-Vermarktungskonzepte-Verkaufsargumente, F a M.: Deutscher Fachverlag.

Krause, Giesela /Lenning, Gertrud, 2010, Kleine Kostümkunde, Schiele & Schön.

Loschek, Ingrid, 1987, Reclams Mode- und Kostümllexikon, Stuttgart: Philipp Reclam.

Loschek, Ingrid, 2007, Wann ist Mode, Berlin: Reimer.

Lowack, Charlotte, 2009, Modekunde - Kleines Arbeits- und Bildbuch, HH: Handwerk + Technik.

Müller, Ulrike, 2009, Bauhaus-Frauen - Meisterinnen in Kunst, Handwerk und Design, Elisabeth Sandmann Verlag.

Mundt, Barbara, 1998, Architekten als Designer, Beispiel in Berlin, München: Hirmer.

O'Mahony, Marie und Sarah E. Braddock, 2002, Sportlook- Mode im Sport und Sport in der Mode, Material-Design-Trends, München: Stiebner.

Targariello, Maria Luisa, 2014, Masters of Fashion, Die bedeutendsten Modeschöpfer im Portrait, White Star Verlag.

Rübel, Dietmar u.a. (Hg.), Materialästhetik-Quellentexte zu Kunst, Design, Architektur, Berlin: Reimer.

Sennett, Richard, 2008, Handwerk, Berlin: Berlin Verlag.

Wachs, Marina-Elena, 2008, Material Mind-Neue Materialien in Design, Kunst und Architektur, Hamburg: Dr. Kovac Verlag.

Wortmann-Weltge, Sigrid, 2008, bauhaus-textilien - kunst und künstlerinnen der webwerkstatt, Edition Stemmler.

Others:

Form, Wallpaper, Frame, Textil Wirtschaft

VOGUE und Hapers Bazaar, GQ

Brüderlin, Markus et al, 2008, Interieur/Exterieur: Living in Art, , Kunstmuseum Wolfsburg.

Brüderlin, Markus, 2013, Kunst & Textil, Kunstmuseum Wolfsburg/Staatsgalerie Stuttgart, Hatje Cantz.

Relevant blogs, movies and websites will be announced at each lesson of the seminar.

## Colour Theory

### Inhalte

- Introduction: What is Colour?, What is Light?
  - What about design trends in colouring your life
  - Physical and psychological conditions to see colour and - coloured objects
  - Perception and effects of light-surface-design object in three-dimensional ways
  - Analyse determining factors of colours in order to categorise them into different colour systems and to develop applicable criteria of
  - Colour systems and colour evaluation.
  - Law of perception and creation\_ of design
  - Applications, - Media of Textiles and of Art, Surfaces, Light and Media (like photography)
  - Pre conditional phase and cultural imprint during the childhood to look on design objects
  - Function of the eye
  - Colour contrasts by Johannes Itten, the colour circle - how to create mixed colours
  - Aesthetic values, - cultural codes, design roots
  - Colour systems in practise (RAL, CNS, Pantone)
  - Colour and material archive /labs.
  - Colour in info graphic to create some
  - Exercises: communicate with the help of colour in analogue and digital media
  - Design Driven Innovation and other methods of design
  - Colour Design Management in Design (for textile prints)
  - Exercises: research in material labs, colour labs and with field studies with interviews of textile experts
  - Design is communicating, Transfer with exercises: as fashion journalist, fashion expert
  - Graphic Design as tool for design manager - Info graphics to storytelling
  - Visits of fairs and trend boards and museums
- it is up to the students interest and engagement
- Looking back on the seminar to prepare the examination - e.g. with the help of an exercise to fashioning the coloured future in Textiles I: Design a pattern - for a Unisex-T-Shirt: 1. Looking back at the seminar: how to communicate with the help of colour - special effects (Razzel Dazzel) - design expertise, 2. CC of the University HN Fb 07, 3. New smart textiles with the help of new colouring methods in (3-D) printing4. a claim to promote the textile and fashion competence, documentation and arguments/statement)

### Literatur

Selection of Literature: (please see the handset at the library at Mg)

- Arnheim, Rudolf: "Art and Visual Perception", "A Psychology of the Creative Eye", The New Version, University of California Press, Berkely, Los Angeles, London 1997
- Brandi, Ulrike und Binet, Helen und Buntschoten, Roul, 2002, Das Geheimnis des Schattens - Licht und Schatten in der Architektur, The scret of the shadow - Light and Shadow in Architecture, Publikation zur gleichnamigen Ausstellung, DAM Frankfurt am Main.
- Bürdek, Bernhard E. 2005 Design - History, theory and practice of product design, Birkhäuser.
- Daucher, Hans:"Künstlerisches und rationalisiertes Sehen", "Gesetzte des Wahrnehmens und Gestaltens", Ehrenwirt Verlag, München, 1967
- Gage, John, 1999, Color and meaning, Berkley: University of Carlifornia Press.
- Harrison, John, 2001, Synaesthesia - the Strangest Thing, Oxford University Presse.
- Hauffe, Thomas, 1999, Design, Laurence King Publishing.
- Itten, Johannes. "The Elements of Color", "A Treatise on the Color System of Johannes Itten Based on His Book The Art Of Color" John Wiley & Sons, INC., New York, Chichester, Weinheim, Brisbane, Singapore, Toronto, Copyright 1970 and portions of the work 1961 by Otto Maier Verlag, Ravensburg
- Kröger, Annette u.a.(Hg.), 1994, Gegenstände der Zukunft - Objects for the future, Stuttgart: Edition Axel Menges.

Lee, Suzanne, 2005, Fashioning the Future - Tomorrow's Wardrobe, London: Thames & Hudson.

McQuaid, Matilda, 2005, Extreme Textiles. Designing for high performance, New York: Smithsonian Institution in association with Cooper-Hewitt, National Design Museum.

Morrison, Jasper und Fukasawa, Naoto, 2007, Super Normal - Sensations of the Ordinary, Lars Müller Publishers.

O'Mahony, Marie und Sarah E. Braddock, 2002 Sportstech, London: Thames and Hudson.

Wachs, Marina-Elena und Bendt, Ellen, 2013, Nachhaltiges Textiles Design / Sustainable Textile Design, Hamburg Schaff Verlag.

Wachs, Marina-Elena 2013: You have to be inspired by..., in: Leydecker, Silvia, 2013 Designing Interior Architecture: Concept, Typology, Material, Construction, Birkhäuser Verlag, Mai 2013.

Wachs, Marina-Elena und Bendt, Ellen, 2015: The German Look at Design - advanced TEXTILE solutions, Hochschule Niederrhein.

Zwimpfer Moritz, 1989, Color: Light, Sight, Sense, Schiffer Pub. Co.

Zwimpfer, Moritz, 2006, Colorondo - A game with 80 colors, Niggli Verlag.

Others:

GRID - Magazine for Graphic and Industrial Design, No 2 2013, München: Institut für Internationale Architektur Dokumentation.

DMI-Trendbooks

AD, Frame, Page



Modul **TCM-380: Fashion Design**

Sprache Englisch

Verantwortlich Prof. Dr. Marina-Elena Wachs

Arbeitsbelastung SWS 4 ECTS 5

60h Präsenz

43h Vor- und Nachbereitung (Arbeitsblätter, Literaturstudium, Tutorien)

22h Prüfungsvorbereitung

Lehrveranstaltungen

		SWS	KP	V	SL	Ü	P	Sem.
Bezeichnung:	Multidimensional Design	2	2	2	0	0	0	5
Lehrende/r:	Lehrbeauftragte							
Voraussetzung:								
Bezeichnung:	Fashion Theory	2	3	2	0	0	0	5
Lehrende/r:	Prof. Dr. Wachs, Marina-Elena							
Voraussetzung:								

Prüfungen

Code-Nr.	Bezeichnung	Art	Prüfungsform
TCM-380	Fashion Design	Pr	Klausur

Anmerkung

The term fashion design stands in relationship to medium of the object: fashion is communicating with different media. The students will reflect the relation about fashion design and multidimensional design, that needs consciousness about the power of three dimensional parameters in creating and communication the message. Symbolic functions of design are equal analysed than "the Look" of fashion.

In the basic lecture design theory and -history (fourth semester) you were introduced to essential aspects about "terms and definitions" of design theory, e.g. artefact, semantics of products, material and cultural codes related to question about: "What is design?, What is good design? What is the difference between product design and fashion design, the importance of CI and CD and CF=Corporate Fashion within design management."

"The making of design" and the design process we regarded in historian sources of other sections (Max Bill and other artists and architects).

In the following lectures on "fashion theory" and "multidimensional design" we will look at the perspective on fashion as well as on essential design skills of seeing and visual perception, take the perspective on fashion from a historical, psychological and sociological perspective with regard to elemental parameters to create fashion; the students will compare fashion with art and sciences to look at the meaning of dress codes, of clothes and fashion. Multidimensional design deals with design problems in the field of textile and clothing design, that means it provides the elements and principles in 2-D and 3-D Design. Further, it is to analyse the human behaviour of "wearing" clothes and look on the relationship to industry and society and hot to build a fashion code with the help of different medias.

Furthermore and in a more general sense, the term fashion design refers to a concept designed to improve everyday life and industrial life. The latest definitions of designs are multifarious and are partly still developing. Hence, the students of Textile- and Clothing Management will encounter at least different areas of design during their studies, which is dedicated to textile and fashion design in the traditional and professional sense of the word.

This involves the knowledge of history, theory and the developing of fashion design concepts. The students will be able to understand the basic laws of visual perception and fashion / design and assess their professional applications in the case of managing fashion and fashion retail with different media.

The multidisciplinary lecture offers a survey of the essential cultural theories investigating fashion as an integral part of human culture. It includes philosophical, historical, economic, sociological, and psychological theories as well as communication theory, all of which deal with different aspects of fashion. The students will discuss texts and images relating to the theories.

The students learn to identify and analyse essential and new fashion theories, which explain the phenomenon and process of fashion. They will be able to deliver examples and apply the theories to new situations. At the same time, the students will improve their critical and communicative abilities when they formulate and present their own opinion in class discussions and term papers.

The students know fashion design dimensions and are able to distinguish design in its various dimensions: historical, aesthetic, psychological, product specific, process-oriented.

## Multidimensional Design

### Inhalte

Multidimensional Design puts fashion in context with elements and principles of design. The elemental parameters a designer employs provide different visual impact. The knowledge of these components also assists in recognizing well-designed, marketable garments and in analyzing why they work. The course of lectures on multidimensional design is divided into two major sections:

#### Section 1 - Design elements

- Point & line
- Shape & volume
- Texture
- Space
- Motion
- Value

#### Section 2 - Design principles

- Harmony
- Emphasis
- Proportion
- Balance
- Rhythm

### Literatur

Arnheim, Rudolf. Art and visual perception. The psychology of the creative eye. Los Angeles: University of California Press 1997

Lauer, David. Pentak, Stephan. Design Basics. London: Thomson Learning 1988

Pipes, Alan. Foundations of Art and Design, London: Laurence King Publishing 2003

Stecker, Pamela. The Fashion Design Manual 2. Australia, December 2009

Tate, Sharon Lee. Inside Fashion Design. New Jersey: Pearson Education 2004

Wong, Wucius. Principles of Form and Design. New York: John Wiley & Sons 1993

Arnheim, Rudolf. Kunst und Sehen. New York: De Gruyter 2000

Itten, Johannes. Design and Form. The basic course at the Bauhaus and later. Ravensburg: Otto Maier Verlag 1975

Bleckwenn, Ruth; Schwarze, Beate. Gestaltungslehre. Formenlehre. Hamburg: Verlag Handwerk und Technik 2010

Frutiger, Adrian: Der Mensch und seine Zeichen, Paris, 1978

Klee, Paul. Das bildnerische Denken. Basel: Verlag Schwabe 2013

## Fashion Theory

### Inhalte

- Introduction: What is Fashion Theory - categories, terms, selection of experts literature!
- What is style? What are styles? The Fashion System in relevance to the thesis of Roland Barthes, Ingrid Loschek and other Fashion sociological views like Diane Crane and a "fashion-theoretical" view by Marina E. Wachs
- Styles in history and today - trends
- Fashion History and "Fashion Behaviour" - terms (field study: the relevance of the corset)
- The influence of technical development - industrialisation and the consequences regarding to social changes. Classes and Fashion - working class to upper class... (influence of "espionage" and mobility to handcraft and of fashion industry- case study GB - Germany - Netherlands.)
- The influence of Art and Architecture on Fashion - Question of form, innovation and >Zeitgeist< - spirit of the time.
- Political impact like the World War and the influence of changing forms - materials - production processes - management and marketing.
- New materials, new design methods, transfer of other disciplines in Fashion
- Today: questions of consumer demands (e.g. >consumers need for uniqueness< and neuro- marketing...) on technical aspects in fashion and sustainability, smart textiles and others.
- Economical influence like system of sustainable handling, - production
- "sustainable thinking" to "fashion thinking" (Wachs)
- >The medium is the message< (Marshall McLuhan, 1976) to Roland Barthes >Fashion System< (1965)
- Fashion and photography - "The Look" (case study Peter Lindbergh)
- Perception of fashion codes, e.g. on the street, corporate fashion, different media
- Sociological basics: Sennett to Simmel and Loschek.
- Influence of fairs and trends on fashionable forms and social behaviour on "la mode" /Couture and >ready-to-wear-clothing<
- The gender question in enterprises and the question about "inclusion" in Fashion
- Fashion and communication - graphical impact in fashion (generative fashion) and in telling the best story to sell fashion (as journalist, as textile expert, as manager)
- Exercises: practically and transdisciplinary: based on fashion in different jobs
- Exercises: scientific working / artistic research (fifth semester!)
- Info: literature, fairs, trade magazines, blogs, labs, organs of fashion studies.
- Offers: Visit and "Enterprise: Start-up?" -lecture by guest
- Fashion Theory to latest fashion research in Fashion Studies (Heike Jenss, 2015 et al)

### Literatur

- Selection of Literature: (please notice new books at the handset at the library in MG)
- Barthes, Roland, 1967, *Systeme de la Mode*, Éditions du Seuil, Paris.
- Barthes, Roland, 1983, *The Fashion System*. Trans. Matthew Ward and Richard Howard, New York: Hill and Wang.
- Boehn, Max von, 1986 (1976), *Die Mode - Eine Kulturgeschichte vom Mittelalter bis zum Barock (Bd.1)*, 3. Überarbeitete Auflage von Ingrid Loschek, München: Bruckmann.
- Boehn, Max von, 1986 (1976), *Die Mode - Eine Kulturgeschichte Barock vom bis zum Jugendstil (Bd.2)*, 3. Überarbeitete Auflage von Ingrid Loschek, München: Bruckmann.
- Bürdek, Bernhard E. 2005 *Design - History, theory and practice of product design*, Birkhäuser.
- Crane, Diana, 2000, *Fashion and its social agendas - Class, Gender And Identity in Clothing*, Chicago und London: The University of Chicago Press. (BIB MG)
- Fletcher, Kate, 2008, *Sustainable Fashion & Textiles, Design Journeys*, London: earthcan.
- Jenss, Heike (Hrsg.), 2015, *Fashion Studies - Research Methods, Sites and Practices*, Bloomsbury.
- Kaiser, Susan B., 2012, *Fashion and Cultural Studies*, Bloomsberg.
- Krippendorff, Klaus, 2006, *the semantic turn - a new foundation for design*, CRC Press and Taylor & Francis

Group.

Loschek, Ingrid, Wann ist Mode, 2007, Berlin: Reimer Verlag.

Samesch, Stéphanie (Hg.), u.a., Corporate Identity und Corporate Design, AvEdition.

Sennett, Richard, 2008, handcraft, Pinguin Book or Berlin.

Vincent, Susan J., 2009, The anatomy of Fashion - Dressing the Body from the Renaissance to today, NY and Oxford: Berg.

Others:

Baudrillard, Jean, 1991, (1968), Das System der Dinge. Über unser Verhältnis zu den alltäglichen Gegenständen, Reihe Campus, Frankfurt am Main: Campus

Bourdieu, Pierre, et Delsaut, Yvette, 1975, Le Couturier et sa griffe: Contribution à une théorie de la magie

Simmel, Georg, 1995, Philosophie der Mode, Die Religion, Kant und Goethe, Schopenhauer und

Nietzsche, Gesamtausgabe Bd.10, Frankfurt am Main, Suhrkamp.

Thun, Matteo, 1996, Appunti a latere - Zur Komplexität der Objektwelt, in: Stephan, Andreas (Hg.), Volker

Albus u.a. - Design - Texte zur Theorie und Praxis, Schriftenreihe der Staatlichen Hochschule für

Gestaltung Karlsruhe, Karlsruhe: Cantz Verlag.

Wachs, Marina-Elena and Weinlich, Dorothee, 2011 (Okt. 2011), Promovieren im Design - ein Kinderspiel?

/ How to do the PhD in Design - a cakewalk?, Blumhardt Verlag.