

2026 年度シラバス

科目分類/Subject Categories			
学部等/Faculty	/大学院工芸科学研究科（博士前期課程）： /Graduate School of Science and Technology (Master's Programs)	今年度開講/Availability	/有：/Available
学域等/Field	/独立専攻：/Fibro/BBM	年次/Year	/1～2年次：/1st through 2nd Year
課程等/Program	/先端ファイブ科学専攻：/Master's Program of Advanced Fibro-Science	学期/Semester	/秋学期：/Fall term
分類/Category	/授業科目：/Courses	曜日時限/Day & Period	/集中：/Intensive

科目情報/Course Information				
時間割番号 /Timetable Number	65119913			
科目番号 /Course Number	65160204			
単位数/Credits	2			
授業形態 /Course Type	講義：Lecture			
クラス/Class				
授業科目名 /Course Title	先端テキスタイル加工－仕上げ：Advanced and Specialized Textile Processing - Finishing			
担当教員名 / Instructor(s)	/WE-TEAM 関係教員：Related teacher of WE-TEAM			
その他/Other	インターンシップ実施科目 Internship	国際科学技術コース提供科目 IGP	PBL 実施科目 Project Based Learning	DX 活用科目 ICT Usage in Learning
	実務経験のある教員による科目 Practical Teacher			
科目ナンバリング /Numbering Code				

授業の目的・概要 Objectives and Outline of the Course	
日	The aim of this course unit is to educate the students on the main aspects of <ul style="list-style-type: none"> • fiber material colouration. A first part is dedicated to how colour can be quantified. A second part is dedicated to the thermodynamics and the kinetics of dyeing process
英	The aim of this course unit is to educate the students on the main aspects of <ul style="list-style-type: none"> • fiber material colouration. A first part is dedicated to how colour can be quantified. A second part is dedicated to the thermodynamics and the kinetics of dyeing processes. A third part applies this knowledge to the most important textile materials, including examples of novel applications. Finally dyeing and printing equipment is discussed. Keywords: Dyeing, printing, textiles, colour Final competences: 1 Theoretical knowledge on: <ul style="list-style-type: none"> • Basic concepts of colour: colour structures, dye classes, colour quantification • Thermodynamics and kinetics of dyeing processes • Dye classes and their application to textiles 2 Insights in: <ul style="list-style-type: none"> • Connection between colour and dye chemistry • Interpretation of spectra

学習の到達目標 Learning Objectives	
日	Theoretical knowledge on: Basic concepts of colour: colour structures, dye classes, colour quantification Theoretical knowledge on: Thermodynamics and kinetics of dyeing processes Theoretical knowledge on: Dye classes and their application to textiles Theoretical knowledge on: Dyeing and printing machinery
英	Theoretical knowledge on: colour structures, dye classes, colour quantification Theoretical knowledge on: Thermodynamics and kinetics of dyeing processes Theoretical knowledge on: Dye classes and their application to textiles Theoretical knowledge on: Selected finishing and printing machinery

学習目標の達成度の評価基準 / Fulfillment of Course Goals (JABEE 関連科目のみ)	
日	
英	

授業計画項目 Course Plan			
No.		項目 Topics	内容 Content
1	日	Basic concepts of colour	Basic concepts of colour
	英	Basic concepts of colour	Basic concepts of colour
2	日	Quantification of colour	Quantification of colour
	英	Quantification of colour	Quantification of colour
3	日	Dye structures and classifications	Dye structures and classifications
	英	Dye structures and classifications	Dye structures and classifications
4	日	Use of Enzymes	Use of Enzymes
	英	Use of Enzymes	Use of Enzymes
5	日	Textile Printing 1	Chemical Part: thickeners, pigments, discharge, resist, innovations
	英	Textile Printing 1	Textile Printing 1
6	日	Textile Printing 2	Mechanical Part: rotary screen, paste delivery, squeegee systems, production of screens, fixation, future developments
	英	Textile Printing 2	Mechanical Part: rotary screen, paste delivery, squeegee systems, production of screens, fixation, future developments
7	日	Textile Printing 3	Mechanical Part: rotary screen, paste delivery, squeegee systems, production of screens, fixation, future developments
	英	Textile Printing 3	Mechanical Part: rotary screen, paste delivery, squeegee systems, production of screens, fixation, future developments
8	日	Textile printing 4	Specialty: transfer, ink jet (principles, ink and substrates, sampling and full scale production, trends)
	英	Textile printing 4	Specialty: transfer, ink jet (principles, ink and substrates, sampling and full scale production, trends)
9	日	Textile printing 5	Specialty: transfer, ink jet (principles, ink and substrates, sampling and full scale production, trends)
	英	Textile printing 5	Specialty: transfer, ink jet (principles, ink and substrates, sampling and full scale production, trends)
10	日	Water in Textile Industry 1	Quality
	英	Water in Textile Industry 1	Quality
11	日	Water in Textile Industry 2	Water treatment
	英	Water in Textile Industry 2	Water treatment
12	日	Textile washing 1	Theory, laundry, washing agents
	英	Textile washing 1	Theory, laundry, washing agents
13	日	Textile washing 2	Ttechnology, machines
	英	Textile washing 2	Ttechnology, machines

14	日	Drying 1	Theory, mechanical water removal
	英	Drying 1	Theory, mechanical water removal
15	日	Drying 2	Thermal drying, dryers, new developments
	英	Drying 2	Thermal drying, dryers, new developments

履修条件 Prerequisite(s)	
日	
英	

授業時間外学習（予習・復習等） Required study time, Preparation and review	
日	Initial competences: <ul style="list-style-type: none"> Basic chemistry at bachelor level including analytical chemistry physical chemistry, organic chemistry and polymer chemistry Basic material science at bachelor level
英	Initial competences: <ul style="list-style-type: none"> Basic chemistry at bachelor level including analytical chemistry physical chemistry, organic chemistry and polymer chemistry Basic material science at bachelor level

教科書／参考書 Textbooks/Reference Books	
日	<ul style="list-style-type: none"> Color Chemistry, H. Zollinger, VCH (Weinheim), ISBN 3-527-28352-8 The Theory of Coloration of Textiles, Ed. A. Johnson, Society of Dyers and Colourists (Bradford), ISBN 0 901956 48 1 Chemical Principles of Synthetic Fibre Dyeing, S. M. Burkinsh
英	<ul style="list-style-type: none"> Color Chemistry, H. Zollinger, VCH (Weinheim), ISBN 3-527-28352-8 The Theory of Coloration of Textiles, Ed. A. Johnson, Society of Dyers and Colourists (Bradford), ISBN 0 901956 48 1 Chemical Principles of Synthetic Fibre Dyeing, S. M. Burkinshaw, Chapman & Hall (Glasgow), ISBN 0 7514 0043 2 Basic Principles of Textile Coloration, A.D. Broadbent, Society of Dyers and Colourists (Bradford), ISBN 0 901956 76 7 <p>Slides and hand-out aew provided during the course and are available on Ufora</p>

成績評価の方法及び基準 Grading Policy	
日	End-of-term evaluation Examination methods in case of periodic evaluation during the first examination period: Written Examination Examination methods in case of periodic evaluation during the second examination period: Written Examination Extra inform
英	End-of-term evaluation Examination methods in case of periodic evaluation during the first examination period: Written Examination Examination methods in case of periodic evaluation during the second examination period: Written Examination Extra information on the examination methods Closed book written examination

留意事項等 Point to consider	
日	Teaching language is English. Intensive course
英	Teaching language is English. Intensive course