2025 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）/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)/Graduate School of Science and Technology (Master's Programs)	今年度開講/Availability	/有/有：/Available/Available
学域等/Field	/独立専攻/<その他>：/Fibro/BBM/<Other>	年次/Year	/1～2年次/1～2年次：/1st through 2nd Year/1st through 2nd Year
課程等/Program	/バイオベースマテリアル学専攻/繊維・ファイバー工学コース教育プログラム：/Master's Program of Biobased Materials Science/Fiber & Fiber Institute Course Educational Program	学期/Semester	/第 1 ｸｫｰﾀ/第 1 ｸｫｰﾀ：/First quarter/First quarter
分類/Category	/授業科目/：/Courses/	曜日時限/Day & Period	/月 4/木 4：/Mon.4/Thu.4

科目情報/Course Information				
時間割番号 /Timetable Number	66101402			
科目番号 /Course Number	66160031			
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	サスティナブル材料合成化学：Environmentally benign polymer materials			
担当教員名 / Instructor(s)	/谷口　育雄：TANIGUCHI Ikuo			
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	M_BM5211			

授業の目的・概要 Objectives and Outline of the Course	
日	We have been confronted with serious environmental problems, such as global warming and climate change. Sustainability is one of the most essential prerequisites to establish our future society. In this class, pathways to realize a sustainable society will be introduced from viewpoints of materials science. For example, environmentally benign degradable polymers have gained attention as an alternative to general purpose plastics. Carbon-neutral or carbon-negative is also a crucial topic to be discussed with energy issue. The students shall learn basic science to develop environmentally benign polymer materials to take an effective route for sustainable society.
英	We have been confronted with serious environmental problems, such as global warming and climate change. Sustainability is one of the most essential prerequisites to establish our future society. In this class, pathways to realize a sustainable society will be introduced from viewpoints of materials science. For example, environmentally benign degradable polymers have gained attention as an alternative to general purpose plastics. Carbon-neutral or carbon-negative is also a crucial topic to be discussed with energy issue.

	The students shall learn basic science to develop environmentally benign polymer materials to take an effective route for sustainable society.

学習の到達目標 Learning Objectives	
日	材料科学の観点からサスティナビリティに関する知識を習得する。 脱炭素を中心とした環境問題の課題や対応策を理解し習得する。
英	Acquiring knowledge about sustainability from the perspective of materials science. Understanding and acquiring knowledge about the challenges and responses to environmental issues centered around decarbonization.

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	Introduction of this course	To describe outline, objective, and goal(s) of this course
	英	Introduction of this course	To describe outline, objective, and goal(s) of this course
2	日	Serious issues requiring immediate actions	To learn how the situation is serious and who to tackle to the issues
	英	Serious issues requiring immediate actions	To learn how the situation is serious and who to tackle to the issues
3	日	Waste plastic issues 1	To learn polymeric/plastic materials: Synthesis and applications
	英	Waste plastic issues 1	To learn polymeric/plastic materials: Synthesis and applications
4	日	Waste plastic issues 2	To learn polymeric/plastic materials: End-of-life plastic issues and the strategies
	英	Waste plastic issues 2	To learn polymeric/plastic materials: End-of-life plastic issues and the strategies
5	日	Bioplastics 1	To learn polymeric/plastic materials: Biodegradable polymers
	英	Bioplastics 1	Bioplastics 1
6	日	Bioplastics 2	To learn polymeric/plastic materials: Biomass-based polymers
	英	Bioplastics 2	To learn polymeric/plastic materials: Biomass-based polymers
7	日	Bioplastics 3	To learn polymeric/plastic materials: Baroplastics 1
	英	Bioplastics 3	To learn polymeric/plastic materials: Baroplastics 1
8	日	Bioplastics 4	To learn polymeric/plastic materials: Baroplastics 2
	英	Bioplastics 4	To learn polymeric/plastic materials: Baroplastics 2
9	日	Introduction of global warming and climate change	To understand precisely about climate change caused by greenhouse gas
	英	Introduction of global warming and climate change	To understand precisely about climate change caused by greenhouse gas
10	日	CO2 mitigation 1	To learn the strategies to reduce CO2 emission
	英	CO2 mitigation 1	To learn the strategies to reduce CO2 emission
11	日	CO2 mitigation 2	To learn the state-of-the-art CO2 capture technologies
	英	CO2 mitigation 1	To learn the state-of-the-art CO2 capture technologies
12	日	Carbon-neutral/negative society	To learn energy issues in conjunction with CO2 mitigation
	英	Carbon-neutral/negative society	To learn energy issues in conjunction with CO2 mitigation
13	日	Student presentation and discussion 1	To make presentation relating to this course with discussion 1
	英	Student presentation and discussion 1	To make presentation relating to this course with discussion 1
14	日	Student presentation and discussion 2	To make presentation relating to this course with discussion 2
	英	Student presentation and	To make presentation relating to this course with discussion 2

		discussion 2	
15	日	Student presentation and discussion 3	To make presentation relating to this course with discussion 3
	英	Student presentation and discussion 3	To make presentation relating to this course with discussion 3

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	Assignments will be given at each class. Students should submit them by the next class.
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教科書／参考書 Textbooks/Reference Books	
日	Handouts will be downloaded after 2nd class.
英	

成績評価の方法及び基準 Grading Policy	
日	Attendance: 40 % Assignment: 40 % Presentation: 20 %
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留意事項等 Point to consider	
日	
英	