

## 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）：<br>/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<br>/Timetable Number  | 65119927   |                   |                                 |                               |
| 科目番号<br>/Course Number      | 65160220   |                   |                                 |                               |
| 単位数/Credits                 | 2  |                   |                                 |                               |
| 授業形態<br>/Course Type        | 講義：Lecture   |                   |                                 |                               |
| クラス/Class                   |  |                   |                                 |                               |
| 授業科目名<br>/Course Title      | 複合材料：Composite Materials                               |                   |                                 |                               |
| 担当教員名<br>/ Instructor(s)    | /大谷 章夫/(Mikael Skrifvars)：OHTANI Akio/Mikael Skrifvars |                   |                                 |                               |
| 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<br>Practical Teacher                    |                   |                                 |                               |
| 科目ナンバリング<br>/Numbering Code | M_AF6121   |                   |                                 |                               |

| 授業の目的・概要 Objectives and Outline of the Course |  |
|---|--|
| 日   | To extend one's knowledge in the domain of composites.<br>Keywords<br>Reinforcing textiles, matrix materials, structure, manufacturing technologies, weaving and braiding technologies, different wetting technologies, applications |
| 英   | To extend one's knowledge in the domain of composites.<br>Keywords<br>Reinforcing textiles, matrix materials, structure, manufacturing technologies, weaving and braiding technologies, different wetting technologies, applications |

| 学習の到達目標 Learning Objectives |   |
|-----------------------------|---|
| 日                           | To extend one's knowledge in the domain of composites |
| 英                           | To extend one's knowledge in the domain of composites |

| 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 | Manufacturing Technologies-I                      | Learn nanotechnology for composites  |
|    | 英 | Manufacturing Technologie-I                       | Learn nanotechnology for composites  |
| 2  | 日 | Manufacturing Technologies-II                     | Learn advanced robotics for composites                                       |
|    | 英 | Manufacturing Technologies-II                     | Learn advanced robotics for composites                                       |
| 3  | 日 | Manufacturing Technologies-III                    | Learn recycling technology for composites                                    |
|    | 英 | Manufacturing Technologies-III                    | Learn recycling technology for composites                                    |
| 4  | 日 | Weaving and Braiding Technologies-I               | Learn the weaving techniques for composites                                  |
|    | 英 | Weaving and Braiding Technologies-I               | Learn the weaving techniques for composites                                  |
| 5  | 日 | Weaving and Braiding Technologies-II              | Learn braiding techniques for composites                                     |
|    | 英 | Weaving and Braiding Technologies-II              | Weaving and Braiding Technologies-II   |
| 6  | 日 | Weaving and Braiding Technologies-III             | Learn the applications of weaving and braiding for composites                |
|    | 英 | Weaving and Braiding Technologies-III             | Learn the applications of weaving and braiding for composites                |
| 7  | 日 | Three Dimensional Reinforcing Structures-I        | Learn 3D woven- braided- and stitched composites                             |
|    | 英 | Three Dimensional Reinforcing Structures-I        | Learn 3D woven- braided- and stitched composites                             |
| 8  | 日 | Three Dimensional Reinforcing Structures-II       | Learn resin application to three-dimensional preforms                        |
|    | 英 | Three Dimensional Reinforcing Structures-II       | Learn resin application to three-dimensional preforms                        |
| 9  | 日 | Three Dimensional Reinforcing Structures-III      | Learn mechanical evaluation of 3D composites                                 |
|    | 英 | Three Dimensional Reinforcing Structures-III      | Learn mechanical evaluation of 3D composites                                 |
| 10 | 日 | Load Bearing Textiles and Sandwich Structures-I   | Learn the fabrication and characterization of composites sandwich structures |
|    | 英 | Load Bearing Textiles and Sandwich Structures-I   | Learn the fabrication and characterization of composites sandwich structures |
| 11 | 日 | Load Bearing Textiles and Sandwich Structures-II  | Learn the durability and Modeling of composites sandwich structures          |
|    | 英 | Load Bearing Textiles and Sandwich Structures-II  | Learn the durability and Modeling of composites sandwich structures          |
| 12 | 日 | Load Bearing Textiles and Sandwich Structures-III | Learn the applications of the composites sandwich structures                 |
|    | 英 | Load Bearing Textiles and Sandwich Structures-III | Learn the applications of the composites sandwich structures                 |
| 13 | 日 | Wetting Technologies-I                            | Learn the wetting mechanism for composites                                   |
|    | 英 | Wetting Technologies-I                            | Learn the wetting mechanism for composites                                   |
| 14 | 日 | Wetting Technologies-II                           | Learn the wetting resin for composites                                       |
|    | 英 | Wetting Technologies-II                           | Learn the wetting resin for composites                                       |
| 15 | 日 | Wetting Technologies-III                          | Learn the wet molding process for composites                                 |
|    | 英 | Wetting Technologies-III                          | Learn the wet molding process for composites                                 |

| 履修条件 Prerequisite(s) |  |
|----------------------|--|
| 日                    |  |
| 英                    |  |

| 授業時間外学習（予習・復習等）<br>Required study time, Preparation and review |  |
|--|--|
| 日  | Bsc level in mathematics, organic chemistry, physical chemistry, general process engineering, textile technology and materials engineering |
| 英  | Bsc level in mathematics, organic chemistry, physical chemistry, general process engineering, textile technology and materials engineering |

| 教科書／参考書 Textbooks/Reference Books |  |
|-----------------------------------|--|
| 日                                 |  |
| 英                                 |  |

| 成績評価の方法及び基準 Grading Policy |                          |
|----------------------------|--------------------------|
| 日                          | written closed-book exam |
| 英                          | written closed-book exam |

| 留意事項等 Point to consider |  |
|-------------------------|--|
| 日                       |  |
| 英                       |  |