

Fibre and Polymer Engineering

Code: CHEM3033

Extent: 20–25 cr

Language: English

Professor in charge: Mark Hughes

Target group: Master's students

Application procedure: Open for all students of Aalto University.

Quotas and restrictions: Please note, that in some courses the number of participants can be limited. Then major students (Fibre and Polymer Engineering) have the priority.

Prerequisites: While making your study plan, you should verify that you have the prerequisites needed for the courses.

Objectives

This minor will help equip students with skills necessary in the development of new fibre, polymer and composite products. With emphasis placed on materials derived from renewable biomass, students will learn about the practises used in product development, which will then be deployed, through project-based learning, in the development of a specific product for a client. To support this process, students select additional courses to complement their expertise and existing skills.

Learning outcomes

After completion of this minor, the student will:

1. have an understanding of the fibre and polymer value chains - from raw material to customer-specific end products
2. have knowledge of the manufacture, properties and application of materials and products derived from fossil- as well as bio-based fibres and polymers
3. have knowledge about the best practices in developing products and managing innovations in modern global companies
4. be able to apply these practices to the fibre and polymer technology related industries in the development of new products
5. recognise the chain of events that takes place between assessing an un-met consumer need and delivering a finished product
6. realise the critical success factors and have an appreciation for the realities of product development in the fibre and polymer technology related industries
7. be able to professionally manage a simple product development project and act in basic leadership and project management situations

Content and structure of the minor

For the minor (20–25 credits) all students have to take the same compulsory studies of 15 cr. Additionally the student needs to select elective studies of 5–10 cr. Please check the list below.

Structure of the minor

| Code | Name | Credits | Period |
|--|-------------------------------------|---------|---------|
| Mandatory courses | | 15 | |
| CHEM-E2160 | Product Development Practices | 5 | III – V |
| CHEM-E2210 | Product Development- Project Course | 10 | I– IV |
| Elective courses | | 5–10 | |
| Select 1–2 courses below so that the Minor will be 20–25 cr. | | | |
| CHEM-E2100 | Polymer Synthesis | 5 | I |
| CHEM-E2130 | Polymer Properties | 5 | II |
| CHEM-E2120 | Fibres and Fibre Products | 5 | I |

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| CHEM-E2140 | Cellulose-Based Fibres | 5 | I - II |
| CHEM-E2150 | Interfacial Phenomena in Biobased Systems | 5 | III - IV |
| CHEM-E2200 | Polymer Blends and Composites | 5 | I |
| CHEM-E2105 | Wood and Wood Products | 5 | III - IV |
| CHEM-E2115 | Wood Products: Application and Performance | 5 | I V - V |
| CHEM-E2125 | Web-Based Natural Fiber Products | 5 | III - IV |
| CHEM-E2135 | Converting of Web-Based Products | 5 | I V - V |
| CHEM-E2145 | Polymer Reaction Engineering | 5 | III - V |
| CHEM-E2155 | Biopolymers | 5 | III - IV |