# Major: Chemical and Process Engineering
# Master's Programme in Chemical, Biochemical and Materials Engineering

Course substitution arrangements for students who continue their studies according to the curriculum of 2022-2024 during the transitional period of 1.8.2024 - 31.12.2025, when some of the courses of the curriculum 2022-2024 are no longer taught.

| **Common compulsory courses (3-5 cr)** | | | |
|---|---|---|---|
| **Code** | **Course name** | **ECTS credits** | **Equivalence in 1.8.2024 - 31.12.2025** |
| CHEM-E0105 | Academic Learning Community | 3–5 | Please contact the teacher |
| **Compulsory courses (35 cr)** | | | |
| **Code** | **Course name** | **ECTS credits** | **Equivalence in 1.8.2024 - 31.12.2025** |
| CHEM-E7100 | Engineering Thermodynamics, Separation Processes, part I D | 5 | CHEM-E7121 Separation Processes 1 D |
| CHEM-E7120 | Laboratory Project in Chemical Engineering | 5 | The course continues |
| CHEM-E7130 | Process Modeling | 5 | The course continues |
| CHEM-E7190 | Process Dynamics and Control D | 5 | The course continues |
| CHEM-E7150 | Reaction Engineering | 5 | The course continues |
| CHEM-E7170 | Design Project in Chemical Engineering, part A | 5 | CHEM-E7127 Principles of Plant and Process Design D |
| CHEM-E7180 | Design Project in Chemical Engineering, part B | 5 | CHEM-E7210 Capstone Project for Plant Design D |
| **Specialisation courses (25 cr), choose five courses.** | | | |
| Recommended "blocks": | | | |
| **Code** | **Course name** | **ECTS credits** | **Equivalence in 1.8.2024 - 31.12.2025** |
| **Chemical Engineering:** | | | |
| CHEM-E7110 | Engineering Thermodynamics, Separation Processes, part II D | 5 | CHEM-E7126 Separation Processes 2 D |
| CHEM-E7115 | Experimental Assignments in Chemical Engineering | 5 | The course continues |
| CHEM-E7160 | Fluid Flow in Process Units | 5 | The course continues |
| **Reaction Engineering:** | | | |
| CHEM-E7115 | Experimental Assignments in Chemical Engineering | 5 | The course continues |

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|---|---|---|---|
| CHEM-E7135 | Reactor Design | 5 | The course continues |
| CHEM-E1130 | Catalysis | 5 | The course continues |
| **Polymer Engineering:** | | | |
| CHEM-E7115 | Experimental Assignments in Chemical Engineering | 5 | The course continues |
| CHEM-E2130 | Polymer Properties D | 5 | The course continues |
| CHEM-E2145 | Polymer Reaction Engineering D | 5 | The course continues |
| **Plant Design:** | | | |
| CHEM-E7105 | Process Development | 5 | The course is discontinued. No replacement course |
| CHEM-E7175 | Process Safety and Sustainability D | 5 | CHEM-E7220 Process Safety and Risk Management D |
| CHEM-E7185 | Plant/Process Design and Business Management | 5 | CHEM-E7128 Plant Design Business Game |
| **Process Systems Engineering:** | | | |
| CHEM-E7151 | Production Planning and Optimization | 5 | The course continues |
| CHEM-E7225 | Advanced Process Control D | 5 | The course continues |
| CHEM-E7215 | Special Course in Process Systems Engineering D | 5 | The course continues |
| For the elective studies to accompany the major, students specializing in process systems engineering are encouraged to select one or more courses from the following list: | | | |
| **Code** | **Course name** | **ECTS credits** | **Equivalence in 1.8.2024 - 31.12.2025** |
| MS-E2122 | Nonlinear Optimization | 5 | The course continues |
| CS-EJ3211 | Machine Learning with Python | 2 | CHEM-E0113 Introduction to MATLAB and Python |
| ENG-A1003 | Numerical Methods in Engineering | 5 | The course continues |
| MS-C2105 | Introduction to Optimization | 5 | The course continues |
| MS-A0503* | First course in probability and statistics | 5 | The course continues |
| MS-A0504* | Todennäköisyyslaskennan ja tilastotieteen peruskurssi | 5 | The course continues |
| CS-E4710 | Machine Learning: Supervised Methods | 5 | CS-E4715 Supervised Machine Learning |