THE IMPLEMENTATION REGULATIONS

2019 - 2020

Professional Doctorate in Engineering

Process and Equipment Design (PED)

Delft University of Technology

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Compiling the study programme

Article 1 The study load

The study load for the 2-year PDEng degree programme on Process and Equipment Design equals 120 ECTS[1]. None of the components of the programme may have formed part of previously followed Bachelor's or Master's degree courses. Extending the programme over 120 ECTS is not preferred and only allowed after special approval of the examination committee.

Article 2 Specializations and tracks

The programme on Process and Equipment Design comprises 2 different tracks:

a) The broad, "process engineering" track, accredited by the Graduate School on Process Technology (OSPT).
b) The more specialized "catalytic designer" track, accredited by the Dutch Institute for Catalysis Research (NIOK, Nederlands Instituut voor Onderzoek van Katalyse).

The main composition of the programme applies to both variants. The difference is found in the choice of subjects in phase B and in the subject of the individual assignment (phase D).

Article 3 The composition

The programme takes 2 years (120 ECTS) and is divided into 4 phases:

Phase A: Broadening of basic knowledge	11 - 22 ECTS
Phase B: Deepening of appropriate specialistic knowledge	17 - 28 ECTS

Phase A and B together 39 ECTS

Phase C: Group Design Project	21 ECTS
Phase D: Individual Design Project	60 ECTS

Phase A, B and C, are part of the first year, the Individual Design Project (D) is carried out in the second year.

PHASE A

Phase A is intended to broaden the knowledge and skills of the trainees. It aims to give all trainees a solid enough basis to function as a process engineer and enable them to cope with the more advanced design courses. Phase A composes of a general part (AG) and a technology part (AT), each divided into six areas:

PHASE A General
- AG1 Applied economics and social sciences
- AG2 Communication and reporting
- AG3 Applied mathematics, modeling and computing
- AG4 Fundamentals of transport phenomena
- AG5 Chemical thermodynamics
- AG6 Chemistry and bio sciences

PHASE A Technology
- AT1 Conversion Technology & Reactor Engineering

[1] ECTS = European Credit Transfer System (1 ECTS-point = 28 hour of study; 1 year of study = 60 ECTS-points)

AT2 Separation Technology
AT3 Process Analysis, Design & Simulation
AT4 Applied Process Technology
AT5 Equipment Design & Process Engineering
AT6 Process Dynamics & Control

In the general part 5 subjects are compulsory. Moreover subjects must be chosen from at least 4 of the 6 given areas and at least one topic must be chosen from the areas Applied economics and social sciences and Communication and reporting. The compulsory subjects are:

ST6611	Techno Economic Evaluations in the Process Industry
ST6111	Project Management
CH3131a	Applied Numerical Mathematics
CH3053	Physical Transport Phenomena
CH3141	Molecular Thermodynamics

In the technology part 6 subjects are compulsory. The subjects are considered to be basic level in Chemical Engineering and trainees with a background in Chemical Engineering will generally be able to get dispensation for these subjects:

CH3681a	Reactors and Kinetics
CH3861	Hydro Carbon Processing
WM0801TU	Risk Management
CH3073	Separation Processes, Design and Operation
CH3043a	Process Dynamics and Control
ST6063a	Aspen

The compulsory subjects must be finished, either during the prior training or in the broadening part. The examination committee will grand dispensation for subjects when a trainee has successfully completed them already during prior training. Depending on the participant's choice between 11 and 17 ECTS are spent in phase A.

PHASE B

During phase B a number of subjects are studied on a more advanced level. The subjects are offered by Delft University of Technology as well as by others. The trainees must choose subjects from the following areas:

BT1 Conversion technology and reactor engineering
BT2 Separation technology
BT3 Process analysis, design and simulation
BT4 Applied process technology
BT5 Equipment design and process engineering
BT6 Process dynamics and control

In order to make sure that the programme is broad enough courses must be taken from at least 4 areas, among them Process analysis, design and simulation. In the latter area, 3 subjects have been made compulsory:

ST6064	Advanced Principles in Product and Process Design
ST7111	Sustainable Design of Processes Products and Systems
ST7101	Advanced process Energy Analysis and Optimisation

PHASE C

During Phase C a team composed of 3 to 4 team members carries out an industrial design assignment. The staff selects assignments for the group project that have a high educational value and provide a broad exposure to industrial technology. Each project is carried out with an industrial partner who benefits from the results obtained during the project. Supervision is provided by staff members of the course and an experienced process engineer/designer from the industrial partner.

The project requires 21 ECTS work-equivalent from each participant and is carried out on part-time bases during 25 weeks of the first year. The time, which is not spent on the design project during this period (14 ECTS), is used for phase B courses.

PHASE D

Phase D covers the second year and consists of an individual project aimed at a design, supported by (experimental) development work. The project is generally carried out at an industrial site under supervision of a team consisting of plant personnel from the host company and staff members from the university. The team provides guidance and regular progress reviews. The participants of the course receive a high degree of individual instruction and evaluation. The project is concluded with a report and a lecture. The work amounts to 60 ECTS; of which at least 40% are spent on the design part.

Article 4 Compiling the study programme and registering the specialization

1. When a trainee commences the programme he/she must prepare a study programme for the first year. The study programme must not only comply with the requirements given in article 3 but must also comply with the timetables of the individual courses. In preparing the study programme the trainee will have the support of the study advisor. After completion, the study programme must be submitted to the examination committee for approval.

2. Any amendments made to the approved study programme must be presented to the board of examiners.

3. Trainees who opt for the graduation track of Catalytic Designer must have approval of study advisor and/or programme director in advance.

4. After completion of the 1st year a formal decision is taken whether the trainee is admitted to the 2nd year to carry out his/her Individual Design Project.

Article 5 Catalytic Designer Track

1. The main composition of the programme as given in article 3 applies also to Catalytic Designer Track. The difference is found in the choice of subjects in phase B and in the subject of the individual assignment (phase D). The requirement for phase B is not to cover 4 areas, instead at least 17 ECTS worth of subjects are chosen in the area of Catalysis.

2. Relevant subjects offered are:

CH3101	Heterogeneous Catalysis for Chemical Engineers
LB2961	Biocatalysis
ST6082	Advanced Catalysis Engineering I
ST6142	Research Traineeship Catalysis
LM3771	Advanced Biocatalysis
NIOK	Catalysis, An Integrated Approach
NIOK	Advanced Catalysis Engineering

Article 6 Date of commencement

These regulations will come into effect on 31 August 2017.

Adopted by the Board of Examiners of Process and Equipment Design on 12 April 2019.