Course: Process Simulation & Modelling 1 — credits: 5

Course code	CTVH24PROCESSIM1
Name	Process Simulation & Modelling 1
Study year	2026-2027
ECTS credits	5
Language	Dutch, with parts in English
Coordinator	M.E.F. Apol
Modes of delivery	Practical / Training Tutorial
Assessments	Processimulatie & Modelleren 1 Practicum - Other assessment Processimulatie & Modelleren 1 Theorie - Computer, organised by STAD examinations

Learning outcomes

This module has the following learning outcomes
- You can roughly dimension a stripper and a distillation column using existing correlations (Fenske, Gilliland-Eduljee), applying dish efficiency.
- You can apply the Lewis-Sorel method for sizing a flash vessel, a stripper and a distillation column for ideal and non-ideal binary mixtures.
- You can apply the McGabe-Thiele method for sizing a stripper and a distillation column for ideal and non-ideal mixtures.
- You can set up a model in the simulation programme Aspen Plus® and compare and evaluate experimental and model results with models in Excel.
- You can interpret research results using models and you can summarise, structure and interpret them in relation to the problem definition.

Content

In the chemical and petrochemical industries, distillation is the most common separation technique. Distillation is a process in which a liquid or vapour mixture consisting of two or more components is separated into component fractions of a desired purity by supplying and removing heat.

Distillation is based on the fact that the vapour of a boiling mixture will generally be richer in the component(s) with the lower boiling points. This means that when this vapour is cooled and condensed, this condensate will contain more of the volatile components. As a result, the original mixture will contain more of the less volatile components.

This module covers various elementary aspects of distillation, such as gas-liquid and liquid-liquid equilibrium, saturated vapour pressure, dew point and bubble point of binary and ternary mixtures, and flash calculations. In addition, various models for liquid-vapour and liquid-liquid equilibria are covered.

These models can be applied in Excel and in Aspen plus to predict the properties of different component mixtures.

Included in programme(s)

Chemical Engineering

School(s)

Engineering, Life Sciences & ICT

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