Course: Fluid Mechanics — credits: 5

Course code	CTVP23STROMING
Name	Fluid Mechanics
Study year	2023-2024
ECTS credits	5
Language	Dutch, with parts in English
Coordinator	R.A. Knigge
Modes of delivery	Lecture Practical / Training
Assessments	Practicum - Other assessment Theorie - Written, organised by STAD examinations

Learning outcomes

The Process Technology 1 curriculum component covers the following components of the Chemical Engineering BOKS:

Knowledge:

Physical transport phenomena: Transport of gases and liquids through pipes

Skills:

Research skills and systematic problem approach

Experiments with pilot set-ups

Social and communication skills

This module has the following learning outcomes:

You calculate and describe flow velocities and pressure differences based on Bernoulli's Law.

You describe and calculate with a given volume flow rate the pressure drop of a piping system (and vice versa). The calculations are set up according to the system where Reynolds number, friction factor and pressure drop are calculated sequentially. The method follows the approach for design of piping systems in practical situations (engineering office).

You describe the viscosity behavior of Newtonian, pseudoplastic and dilatant fluids and use this knowledge to create viscograms/rheograms.

You reflect on your performance and professional development.

DAS competencies

Competency	Level (I-IV)
Research	I
Experimentation	I
Development	I
Management	
Advise	I
Instruction	I
Leadership	
Self-management	I

Content

Fluid dynamics is about the flow behaviour of fluids.
To design a pipe network, the resistance encountered by the flow is very important. It largely determines the required pumping capacity. The resistance depends on the viscosity of the liquid, the flow velocity and the resistance of fittings in the pipe.
You learn to calculate the flow speed and the magnitude of the resistances and you gain insight into the flow behaviour of viscous fluids. The sedimentation rate of small particles in a fluid is also discussed.
Besides calculation, measuring flow behaviour is also important. You are therefore introduced to the operation of viscometers, pressure gauges and flow meters.

Included in programme(s)

School(s)

Chemical Engineering

Institute for Life Science & Technology

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