Course: Installation Engineering — credits: 5

Course code	WBVB25IB
Name	Installation Engineering
Study year	2026-2027
ECTS credits	5
Language	Dutch, with parts in English, English
Coordinator	D.A.G. Kurstjens
Modes of delivery	Education
Assessments	Installation Engineering - Assignment

Learning outcomes

The student:

- Applies the Mollier h-x chart to design processes for conditioning air, and calculates the associated cooling, heating, drying and moistening duties.
- Calculates inlet air conditions and flow required to maintain a required room condition.
- Explains the effect of control valves and check valves on flow distribution, pressure differences over valves, heat transfer and temperatures within a hydronic system with varying duty.
- Selects valves (kvs) with appropriate authority while minimizing pump power and calculates target pressure differences across valves.
- Interprets and designs the modular hydronic structure and checks for its correct functioning.

Content

This course provides the basics of HVAC (Heating, Ventilation and Air Conditioning) installation design and engineering for climate control in buildings. The design process starts at climate requirements and heating/cooling duties. The process ends with the design of the hydraulic system and dimensioning of valves and piping. An overview is provided of distribution systems and components to deliver heat, cold and fresh air.
This course deals with air treatment installations and heat delivery systems, but not with the generation of heat and cold (chillers, heat pumps, CHP, heat/cold storage, boilers, etc.). Much attention will be given to the hydronic design (parallel circuits with headers, pipes, control valves and balancing valves), which is key to energy efficiency of installations and comfort of people in buildings. The provided knowledge on hydronic systems is also relevant for understanding and designing industrial process installations, district heating systems and for efficient operation of heat pumps.

Included in programme(s)

Mechanical Engineering VWO a 3-year variant
Mechanical Engineering
Exchange Research, Design & Engineering (spring)

School(s)

Engineering, Life Sciences & ICT

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