Course description

Course code:	MAP18ET / MAP18 ET02
Course name:	Fluid Dynamics and Heat Transfer
Extent of studies:	3 ECTS
Recommended Progression of Studies:	2nd year
Prerequisites:	Hydromechanics and thermal physics (recommended) General Energy Technology (recommended) Applied Thermodynamics (recommended)
Course-specific Competences (matrix):	Look at the Matrix
Language of instruction:	Swedish
Courses included in the Study Module:	Applied Thermodynamics Streaming and Heath Transport Energy Technical Laboratory Works Operation and Process Economic
Administering Degree Programme:	Mechanical and Production Engineering

Made by:	Checked by:	Approved by:	Valid in curriculum
MB 6.3.2018	HS 8.3.2018	HS 8.3.2018	2018

Course-specific competences

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Competences	Criteria for Assessment		
	1	3	5
Fluid dynamics	Can calculate pipe friction for a single pipe using a MOODY diagram. Can draw conclusions qualitatively and do simple calculations using the Bernoulli principle. Can interpret pump diagrams and do simple calculations based on these.	Can calculate unbranched pipe systems with pumps and minor losses. Can apply the Bernoulli principle to systems without energy loss. Can use pump diagrams in calculations on pipe systems.	Can do calculations on branched pipe systems.
Heat transport	Can calculate rates of heat flow through radiation, conduction, and convection. Can calculate heat transfer coefficients based on empirical formulas with characteristic numbers.	Can calculate equilibrium temperatures in situations with simultaneous heat flows of different types. Can calculate temperature profiles in multi-layer walls. Can do calculations on heat exchangers using logarithmic mean temperature difference.	Can do calculations on cylindrical geometry and structures involving thermal resistances connected both in series and in parallel. Can, from flow conditions, calculate the overall heat transfer coefficient for heat exchangers of simple geometry.
Thermal radiation	Knows the relationships between temperature, radiation spectrum, absorptivity and emissivity. Knows the principles of thermography.	Can do calculations on the spectrum.	Can include the effect of emissivity in analysis of thermographic data.
Calculation	Can mathematically formulate and solve standard problems in fluid dynamics and heat transfer.	Can use computerised tools to efficiently solve problems and analyse relationships in the fields of fluid dynamics and heat transport.	Can derive relationships in fluid dynamics and heat transport. Can use computerised tools to solve mathematically complex problems.

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