

Syllabus of the course of EEN-E4004 Fundamentals of HVAC Design

Course name	<i>Fundamentals of HVAC Design</i>
Course code	EEN-E4004
Status of course	HVAC master major
Responsible teacher	Prof. Risto Kosonen
Other teacher	Juho Lepistö, Vikke Niskanen
Teaching period(s)	IV-V
Starting (year)	2019
Varying contents	No
Credits (cr)	5 cr
Workload	<p>Contact hours (22 h):</p> <ul style="list-style-type: none"> • Lectures and in-class calculation exercises 14 h • CAD exercises 8 h <p>Independent work (109,5 h):</p> <ul style="list-style-type: none"> • Course tasks 50 h • MagiCAD design work 69,5 h <p>Total 133,5 h</p>
Learning outcomes	<p>After passing the course the student</p> <ul style="list-style-type: none"> - has preliminary readiness to design and size HVAC-systems for residential buildings - has a basic understanding of building codes for indoor climate and energy efficiency of residential buildings - has a basic understanding of heating, ventilation, water and sewage systems and their components - has understanding to set targets for indoor climate and energy efficiency - has understanding to calculate outdoor air flow rate and heating power of room space - has understanding to size ventilation, heating, domestic hot water and sewage systems - has a basic understanding how building systems are integrated into community infrastructure
Content and teaching methods	<ul style="list-style-type: none"> -Lectures and CAD-exercises -Design assignment of a single family house where HVAC systems are selected and dimensioned - Design tasks cover the main tasks and processes of HVAC-design - Sizing of HVAC systems and its main components: <ul style="list-style-type: none"> • targets setting for indoor climate, calculation of outdoor airflow rate and heating power of room spaces, • system selection and sizing of ductwork, heating pipes and sewage and domestic hot water systems

	<ul style="list-style-type: none"> • sizing of heating plant, air handling unit and control strategy • integration of building system into public utilities • documentation of HVAC systems <p>6 lectures, 3 CAD exercises</p>
Assessment method and criteria	<ul style="list-style-type: none"> • Tasks 1-4 40%, 10 % each • Task 5 30 % • Task 6 30 % <p>Every task is mandatory and if not returned, one cannot pass the course.</p> <p>Every task is graded on a scale of 0-5. The final course grade is the weighted average of the task grades.</p>
Literature	Lecture notes (pp- presentations) and background material supplied by the lecturers.
Grading	0-5
Language of instruction	English