

Course description

Course abbreviation:	KKE/VVK	Page:	1 / 3
Course name:	Heating, ventilation and air-conditionin		
Academic Year:	2023/2024	Printed:	03.06.2024 08:12

Department/Unit /	KKE / VVK			Academic Year	2023/2024
Title	Heating, ventilation and air-conditionin			Type of completion	Exam
Long Title	Heating, ventilation and air-conditioning				
Accredited/Credits	Yes, 4 Cred.			Type of completion	Combined
Number of hours	Lecture 2 [Hours/Week] Tutorial 2 [Hours/Week]				
Occ/max	Status A	Status B	Status C	Course credit prior to	YES
Summer semester	0 / -	1 / -	0 / -	Counted into average	YES
Winter semester	0 / -	0 / -	0 / -	Min. (B+C) students	10
Timetable	Yes			Repeated registration	NO
Language of instruction	Czech			Semester taught	Summer semester
Optional course	Yes			Internship duration	0
Evaluation scale	1 2 3 4			Ev. sc. – cred.	S N
No. of hours of on-premise					
Auto acc. of credit	Yes in the case of a previous evaluation 4 nebo nic.				
Periodicity	K				
Substituted course	None				
Preclusive courses	N/A				
Prerequisite courses	N/A				
Informally recommended courses	N/A				
Courses depending on this Course	N/A				

Course objectives:

Internal environment of buildings, microclimate, harmful substances in the environment, evaluation of the contamination of the environment. Heating, heat properties of buildings, convection heating, radiation heating; water, steam and air heating system. Control of heating device. Ventilation and exhaustin, air flow in ventilation space, natural ventilation, forced ventilation, exhaustin equipment. Air-conditioning, air-conditioning equipment, reutilization of heat, air distribution. Innovative sources of energy.

Requirements on student

Elaboration of semestral work, oral exam.

Content

Topics of lectures according to weeks :

1. Introduction into problematic of technical equipments of buildings
2. Internal environment of buildings, microclimate
3. Thermal and technical characteristics of buildings
4. Basic processes of heating of buildings
5. Heating systems
6. Ventilation of buildings
7. Air coditioning equipments

8. Equipments of heating and air conditioning systems
9. Control and regulation of heating and air conditioning systems
10. Noise and sound source in engineering construction
11. Renewable energy sources for heating
12. Preparing of hot water
13. Economy and ecology of technical equipments of buildings

Fields of study

Guarantors and lecturers

- **Guarantors:** Ing. Vladimír Křenek (100%)
- **Lecturer:** Ing. Vladimír Křenek (100%)
- **Tutorial lecturer:** Ing. Vladimír Křenek (100%)

Literature

- **Basic:** Drkal, František. *Technika životního prostředí*. Praha : ČVUT, 1988.
- **Recommended:** Bašta, Jiří. *Otopné plochy*. Praha : Vydavatelství ČVUT, 2001. ISBN 80-01-02365-6.
- **Recommended:** *Větrání a klimatizace*. Praha : Bolit-B, 1993. ISBN 80-901574-0-8.
- **Recommended:** Chyský, Jaroslav. *Vlhký vzduch*. Praha : SNTL, 1963.

Time requirements

All forms of study

Activities	Time requirements for activity [h]
Preparation for an examination (30-60)	55
Undergraduate study programme term essay (20-40)	30
Preparation for formative assessments (2-20)	20
Total:	105

assessment methods

Knowledge - knowledge achieved by taking this course are verified by the following means:

- Oral exam
- Seminar work

prerequisite

Knowledge - students are expected to possess the following knowledge before the course commences to finish it successfully:

samostatně využívat teoretických znalostí z oboru mechaniky tekutin, termomechaniky, mechaniky tuhých těles, pružnosti a pevnosti pro řešení a návrh konkrétních technických zařízení staveb

Skills - students are expected to possess the following skills before the course commences to finish it successfully:

aplikovat znalosti z oboru mechaniky tekutin, termomechaniky, mechaniky tuhých těles, pružnosti a pevnosti při řešení a návrhu konkrétních technických zařízení staveb

teaching methods

Knowledge - the following training methods are used to achieve the required knowledge:

Lecture

Practicum

learning outcomes

Knowledge - knowledge resulting from the course:

popsat a vysvětlit řešení systémů pro vytápění, větrání, klimatizaci a přípravu teplé vody v různých objektech

Skills - skills resulting from the course:

navrhnout řešení systémů pro vytápění, větrání, klimatizaci a přípravu teplé vody v různých objektech

Course is included in study programmes:

Study Programme	Type of	Form of	Branch	Stage	St. plan v.	Year	Block	Status	R.year	R.
Civil Engineering	Bachelor	Full-time	Building Structures	1	2023	2023	Povinně volitelné předměty	B	3	LS
Civil Engineering	Bachelor	Full-time	Building Structures	1	2018	2023	Povinně volitelné předměty	B	3	LS
Civil Engineering	Bachelor	Full-time	Building Structures	1	2022	2023	Povinně volitelné předměty	B	3	LS
Stavební inženýrství - Bachelor Pozemní stavby		Full-time	Stavební inženýrství - Pozemní stavby	1	2023	2023	Povinně volitelné předměty - skupina 4	B	3	LS
Stavební inženýrství - Bachelor Pozemní stavby		Full-time	Stavební inženýrství - Pozemní stavby	1	2021 akr	2023	Povinně volitelné předměty - skupina 4	B	3	LS