

Course description

Course abbreviation:	KKE/MPC	Page:	1 / 3
Course name:	Install. and Operation of Power Plants		
Academic Year:	2023/2024	Printed:	03.06.2024 08:47

Department/Unit /	KKE / MPC			Academic Year	2023/2024
Title	Install. and Operation of Power Plants			Type of completion	Exam
Accredited/Credits	Yes, 4 Cred.			Type of completion	Combined
Number of hours	Lecture 3 [Hours/Week] Tutorial 1 [Hours/Week]			Course credit prior to	YES
Occ/max	Status A	Status B	Status C	Counted into average	YES
Summer semester	4 / -	0 / -	0 / -	Min. (B+C) students	10
Winter semester	0 / -	0 / -	0 / -	Repeated registration	NO
Timetable	Yes			Semester taught	Summer semester
Language of instruction	Czech			Internship duration	0
Optional course	Yes			Ev. sc. – cred.	S N
Evaluation scale	1 2 3 4				
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:

The course focuses on the following areas :

installation work in general, supplying and installation companies; transport and protection of the equipment; packing and anticorrosive protection of equipment for transport; economy and procedures; checking of machine bases; testing of machine parts during manufacturing; hydraulic tests; installation of reactor pressure vessels; flushing-through of piping; chemical cleaning and blowing-through of piping; individual and complex tests; handing over the plant to the customer; partial operating tests; operation in the guarantee period, performance tests and their evaluation; starting the plant after breaks in operation of different duration; safety equipment of classical and nuclear power plants; measuring and control equipment; safety of installation work; operation manuals; parts subject to most frequent failures.

Requirements on student

Active participation in lectures and tutorials, final test and oral exam.

Content

Installation work in general, supplying and installation companies; transport and protection of the equipment; packing and anticorrosive protection of equipment for transport; economy and procedures; checking of machine bases; testing of machine parts during manufacturing; hydraulic tests; installation of reactor pressure vessels; flushing-through of piping; chemical cleaning and blowing-through of piping; individual and complex tests; handing over the plant to the customer; partial operating tests; operation in the guarantee period, performance tests and their evaluation; starting the plant after breaks in operation of different duration; safety equipment of classical and nuclear power plants; measuring and control equipment; safety of installation work; operation manuals; parts subject to most frequent failures.

Fields of study

Guarantors and lecturers

- **Guarantors:** Ing. Pavel Žitek, Ph.D. (100%)
- **Lecturer:** Ing. Daniel Opplt (25%), Ing. Ondřej Szabó (25%), Ing. Pavel Žitek, Ph.D. (50%)
- **Tutorial lecturer:** Ing. Daniel Opplt (50%), Ing. Ondřej Szabó (50%), Ing. Pavel Žitek, Ph.D. (100%)

Literature

- **Basic:** Schenck, Carl. *Preventivní údržba strojů: Základy, metody a přístroje pro posuzování, diagnostiku a sledování strojů a pro údržbu podle jejich skutečného stavu*. Praha: Nakladatelství technické literatury, 1989.
- **Basic:** Žákovec Vojtěch, Martínek Stanislav. *Provoz elektráren - firemní dokument ŠKODA*.
- **Basic:** Páv Arnošt. *Provoz parních turbin a příslušenství*.
- **Recommended:** CEGB. *Modern Power Station Practice. 8 Volumes*. Oxford, 1960.
- **Recommended:** Dlouhý. *Montáž a provoz parních turbin*. skripta Plzeň, 1963.
- **Recommended:** Hájek Gustav. *Odstředivá čerpadla*.
- **Recommended:** Vilimec, Ladislav. *Řízení a regulace energetických zařízení*. 1. vyd. Ostrava : VŠB - Technická univerzita Ostrava, 2008. ISBN 978-80-248-1853-5.
- **Recommended:** Bečvář, Josef. *Tepelné turbíny*. 1. vyd. Praha : SNTL, 1968.

Time requirements

All forms of study

Activities	Time requirements for activity [h]
Contact hours	52
Preparation for comprehensive test (10-40)	12
Preparation for an examination (30-60)	40
Total:	104

assessment methods

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

Oral exam

Skills - skills achieved by taking this course are verified by the following means:

Skills demonstration during practicum

prerequisite

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

- popsat a vysvětlit vlastnosti základních strojních součástí
- popsat a vysvětlit konstrukční uspořádání parních turbin
- využívat samostatně teoretické znalosti z oblasti mechaniky tekutin
- využívat samostatně teoretické znalosti z oblasti termomechaniky
- využívat samostatně teoretické znalosti z oblasti pružnosti a pevnosti

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

- číst a orientovat se v technických výkresech součástí a sestav
- číst a orientovat se v různých druzích schémata (např. regulační, elektrické, teplotnické)
- nakreslit a popsát schéma Rankin - Clausiova cyklu

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

Lecture

Skills - the following training methods are used to achieve the required skills:

Practicum

learning outcomes**Knowledge - knowledge resulting from the course:**

popsat a vysvětlit kontrolu základů zařízení

popsat a vysvětlit postup montáže parní turbíny

popsat a vysvětlit zásadní kontrolní operace v průběhu montáže parní turbíny

popsat a vysvětlit základní operace při montážích dalších významných uzlů parních centrál

popsat činnosti v etapě zkoušek

znát a popsát garanční provoz a zkoušky

znát postup najíždění s klasickým blokem po různě dlouhé provozní přestávce

Skills - skills resulting from the course:

popsat a vysvětlit zásady montážních prací

schopnost zvolit postup montáže

navrhnout způsob korekce ustavení částí parní turbíny

vhodně zvolit chemické čištění a profukování potrubí před spouštěním a vysvětlit jejich princip

umět správně vyhodnotit garanční zkoušky

Course is included in study programmes:

Study Programme	Type of	Form of	Branch	Stage	St. plan v.	Year	Block	Status	R.year	R.
Design of Power Machines and Equipment	Postgraduate Master	Full-time	Design of Power Machines and Equipment	1	2020	2023	Compulsory courses	A	2	LS