

Course description

Course abbreviation:	KMM/VKSV	Page:	1 / 3
Course name:	Selected Chapters from Metal Welding		
Academic Year:	2023/2024	Printed:	02.06.2024 14:18

Department/Unit /	KMM / VKSV			Academic Year	2023/2024
Title	Selected Chapters from Metal Welding			Type of completion	Exam
Accredited/Credits	Yes, 5 Cred.			Type of completion	Combined
Number of hours	Lecture 2 [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	0 / -	0 / -	0 / -	Min. (B+C) students	10
Winter semester	0 / -	17 / -	2 / -	Repeated registration	NO
Timetable	Yes			Semester taught	Winter 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	KMM/VKSV*				
Preclusive courses	KMM/VKSVA				
Prerequisite courses	N/A				
Informally recommended courses	KMM/TSV				
Courses depending on this Course	N/A				

Course objectives:

The course focuses on advanced welding methods of arc welding, cladding, diffusion welding, explosion welding, friction welding, thermal spraying, thermal cutting. Attention is also paid to the laser and electron beam welding, water jet cutting, correcting the deformation after welding and to the numerical simulation of welding processes.

Requirements on student

Pre-exam requirements: 1 semestral work, student presence on welding laboratory course and company excursion.
Exam: Paper and verbal examination.

Content

The course focuses on advanced welding methods; diffusion welding, explosion welding and friction welding. Attention is also paid to the welding and repairing of constructional ceramics parts, thermal spray coatings and weld surfacing technologies, plasma arc cutting, laser and electron beam technologies for surface treatment. Advanced technologies of surfacing. Industry application samples.

Fields of study

Guarantors and lecturers

- **Guarantors:** Doc. Ing. Stanislav Němeček, Ph.D. (100%)
- **Lecturer:** Ing. Petra Čejková, IWE (50%), Doc. Ing. Stanislav Němeček, Ph.D. (50%)
- **Tutorial lecturer:** Ing. Petra Čejková, IWE (50%), Doc. Ing. Stanislav Němeček, Ph.D. (50%)

Literature

- **Basic:** D.L. Olson, T.A. Siewert, S. Liu, G.R. Edwards. *ASM Handbook Volume 6: Welding, Brazing, and Soldering*. 1993. ISBN 978-0-87170-382-8.

- **Basic:** Kuncipál, Josef; Dunovský, Jiří; Pilous, Václav. *Nové technologie ve svařování*. 1. vyd. Praha : SNTL, 1984.
- **Basic:** Kovařík, Rudolf. *Technologie svařování*. 1. vyd. Plzeň : ZČU, 1993. ISBN 80-7082-112-4.
- **Extending:** Časopisy. *Zváranie-svařování*. VÚZ Bratislava.
- **Recommended:** Turňa, Milan. *Špeciálne metódy zvarovania*. 1. vyd. Bratislava : Alfa, 1989. ISBN 80-05-00097-9.
- **Recommended:** Časopisy. *Welding Journal*.
- **Recommended:** Sindo Kou. *Welding Metallurgy*. New Jersey, 2002. ISBN 0-471-43491-4.

Time requirements

All forms of study

Activities	Time requirements for activity [h]
Contact hours	39
Graduate study programme term essay (40-50)	45
Preparation for an examination (30-60)	45
Total:	129

assessment methods

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

- Combined exam
- Seminar work

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

- Oral exam

Competences - competence achieved by taking this course are verified by the following means:

- Oral exam

prerequisite

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

- Knowledge of welding theory and technology is required.
- Student mastered the basics of material science and the structure of metals, knows the principles of heat treatment and metallurgy of welds.

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

- The student should be able to choose the right welding technology.

Competences - students are expected to possess the following competences before the course commences to finish it successfully:

- N/A

teaching methods

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

- Lecture supplemented with a discussion
- Practicum
- Task-based study method
- Multimedia supported teaching

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

- Multimedia supported teaching
- Lecture
- Practicum

Lecture with a video analysis

Field trip

Competences - the following training methods are used to achieve the required competences:

Lecture

Multimedia supported teaching

learning outcomes

Knowledge - knowledge resulting from the course:

Students who passed the exam are orienting in advanced welding technologies and surfacing. Students are able to design complex welding procedure specifications in welding industry.

Skills - skills resulting from the course:

Students will have to work out the technological procedure of the weldment.

Competences - competences resulting from the course:

N/A

Course is included in study programmes:

Study Programme	Type of	Form of	Branch	Stage	St. plan v.	Year	Block	Status	R.year	R.
Materials Science and Manufacturing Technology	Postgraduate Master	Full-time	Materials Science and Manufacturing Technology	1	2020	2023	Core elective courses	B	2	ZS
Materials Science and Manufacturing Technology	Postgraduate Master	Combined	Materials Science and Manufacturing Technology	1	2020	2023	Core elective courses	B	2	ZS