

SYLLABUS - WELDING

Basic course data			
Academic unit:	University of Applied Sciences in Ferizaj Industrial Engineering with Computing		
Course title:	WELDING		
level:	Bachelor		
Course status:	elective		
Year of studies:	III		
Number of hours per week:	2+2		
Credits value - ECTS:	5		
Time / location:	9.00 – 12.15 / S 206		
Course teacher:	Mr.Sc.Fatmir Çerkini		
Contact details:	Cabinet nr.116, fatmir.cerkini@ushaf.net , fatmir.cerkini@gmail.com .		
Course description:	<i>Comparison of welding with other processes. Classification of welding modes. Welding metallurgy. Thermal impacts during welding. Welding of steel. Welding of gray cast iron. Non-ferrous metal welding. Oxygen acetylene welding. Gas cutting. Welding with electrical resistance. Welding with electrical contacts and induction. Electrical resistance welding machines. Electric arc welding. Manual arc welding .. Classification of electrodes for manual welding. Electric arc welding under flux protection. Electric arc welding under the protection of gases. Protective gases. Plasma cutting and welding. Underwater welding and cutting. Tandem welding. Friction welding. Mixed friction welding. Electronic beam welding. Laser welding. Ultrasound welding. Soldering. Soft and strong soldering. Other types of soldering. Soldering Materials. Welding errors. Checking and testing welded joints.</i>		
Objectives of the course:	<i>Understanding students with welding processes. Types of welding. The advantages of welding in the construction of structures compared to other methods</i>		
Expected learning outcomes:	<i>After the completion of this course the student will be able to:</i> <i>1. Know the welding methods and use them most appropriately in the right places.</i> <i>2. Choose the appropriate parameters for specific welding cases.</i> <i>3. Recognize contemporary welds and apply them</i> <i>4. Recognize and be able to apply welded structures testing methods.</i>		
Contribution to the student load (which must correspond with learning outcomes)			
Activity	Hour	Day/Week	In total
Lectures	2	15	30
Theoretical / laboratory exercises	2	15	30
Practical work	4	2	8
Contacts with teacher / consultations	0.5	10	5

Field exercises	-	-	-
Midterm, seminars and projects.	1	2	2
Homework	4	1	4
Self-learning time student (at the library or at home)	2	15	30
Final preparation for the exam	3	4	12
Time spent on evaluation (tests, quiz and final exam)	1	2	2
Projects and presentations.	1	2	2
Total			125 orë
Teaching methodology:	<i>Lectures combined with practical and laboratory work</i>		
Assessment methods:	<i>First written evaluation: 30%</i> <i>Second written evaluation: 20%</i> <i>Homework (Workshop): 35%</i> <i>Attendance and engagement: 15%</i> <i>Final exam: 50%</i> <i>Total: 100 %</i>		
Literature			
Basic Literature:	<i>1. Fatmir Çerkini, SALDIMI (Script), University of Applied Sciences in Ferizaj</i>		
Additional Literature:	<i>1. Ing. T. Haxhiymeri Teknologji metalesh-saldimi, USHT, Tiranë 1972</i> <i>2. C. Bertucelli, V. Bettini, A. Carrer, M. S. Florio, I. Marino, M. Porsevani, E. Quinzio, C. Reverdy – Tecnologia Meccanica, SALDATURA, Milano</i> <i>3. Dr. B. Bytyqi Saldimi, Universiteti i Kosovës, Prishtinë</i> <i>4. Dr. S. Cundev, Mr. N. Cekreoti Elektricino zavaruvanje, Skopje</i> <i>5. Mr. R. Jovanoviq, Inxh i dipl. V. Vojnoviq Teknologjia e profesionit për kl. IV të ars. të orientuar, dega e makinerisë</i> <i>6. Inxh. M. Arsenijeviq, Inxh. M. R. Llishanin Teknologjia e përpunimit pa prerje për kl. IV të shk. tekn. të makinerisë</i> <i>7. Prospect of welded steel pipe factory in Ferizaj.</i>		
The ratio of theory and practice	<i>60% theory with numerical exercises and 40% laboratory work.</i>		
Designed learning plan			
Week:	Lectures and exercises to be held		
Week one:	<i>Introduction. Comparison of welding with other processes. Classification of welding modes</i> Literature: Fatmir Çerkini „, SALDIMI ”(script),		
Week two:	<i>Welding metallurgy. Thermal Impact Area (TNA). Thermal impacts during welding. Tempering during welding. Preventing deformities and tensions</i>		
Week three:	<i>Welding of steel. Welding of gray cast iron. Non-ferrous metal welding. Welding of copper and its alloys .. Welding of aluminum and its alloys. Welding of zing, nickel and lead</i>		

Week four:	<i>Autogenous (gas) welding. Oxygeno-acetylene welding. Gas welding equipment Oxygeno-acetylene flame. Kinds of flames. Plugs.</i>
Week five:	<i>Gas cutting. Gas cutting machine. Special sand cutting machine. Errors during cutting. Cutting by hand. Machine cutting.</i>
Week six:	<i>Welding with electrical resistance. Point welding. Distribution of temperatures at point welding. Seam welding. Shore welding. Ball welding.</i>
Week seven:	<i>Welding with electrical contacts and induction. Frequency contact welding. Induction welding. Electrical resistance welding machines.</i>
Week eight:	<i>Electric arc welding. The length of the bow. Filling the seam. Characteristics of arc and electric source. Electric arc welding by hand. Holding the electrode. Flashing of the bow. Holding the bow. Arch break. Electrode trajectories.</i>
Week nine:	<i>Hand welding equipment. Electricity sources. Cables. Electrode Holder. Sewer cleaning tools. Protective tools during welding. Work desk. Additional material. Worn electrodes. Electrode sheath. Classification of electrodes First written evaluation:</i>
Week ten:	<i>Welding under flux (dust) protection. Welding under gases protection. Welding MAG, MIG, TIG.</i>
Week eleven:	<i>Plasma welding. Gases used for plasma formation. Advantages and disadvantages of plasma use. Welding under the electrocardiogram.</i>
Week twelve:	<i>Other welds. Underwater welding and cutting. Tandem welding. Friction welding. Mixed friction welding (FSW). Electronic welding. Laser welding. Ultrasound welding.</i>
Week thirteen:	<i>Soldering. Soft soldering. Strong soldering. The most important methods of soldering. Soldering materials.</i>
Week fourteen:	<i>Welding errors. Cracks. Checking and examining welded joints. Testing of welded joints with destruction. Testing welded joints without breaking</i>
Week fifteen:	<i>Second written evaluation: Submission of seminar papers</i>

Academic policies and rules of conduct

Regular attendance of lectures and exercises is necessary, as well as active participation with discussion and solution of tasks. Not impeding the progress required for learning using mobile phones turned off or in silent mode.