

Date: 21/01/2024	Examination No.: 3138	Version: 21/01/2024	Semester Start 21/01/2024
Module Name - Code	Welding Metallurgy - 3138		
Module Language:	English		
Responsible:	Dr. Mohamedtahir M. Saeed/ Asst. Professor – Ph.D.		
Lecturer (s):	Dr. Ahmed Samir / Lecturer - Ph.D.		
College:	College of Engineering – Salahaddin University-Erbil (SUE)		
Duration:	15-week – 7 th semester		
Course outcomes:	This course covers the metallurgical aspects of welding common engineering metals such as plain carbon, alloy, stainless steel, aluminium, and cast irons. The selection of filler metals, transfer and recovery of alloying elements, and the design of preheating and post-heating cycles are also emphasized. Incidences of defects such as cracking and porosity and factors affecting these will also be discussed.		
Course Content:	Introduction to engineering materials; Welding Metallurgy; Types of welding processes; Shielded Metal Arc Welding; Gas Welding (MIG & TIG); Plasma Arc Welding; Electron Beam and Laser Welding; Solid State Welding, Friction Stir Welding (FSW); Robotic welding; Other welding processes; Welding Defects; Welding Tests (DT & NDT).		
Literature:	Sindo Kou "Welding Metallurgy" Second Edition Xin Sun "Failure mechanisms of advanced welding processes."		
Type of Teaching:	Weekly 4 h Theoretical Lectures + 2 h Practical Lectures.		
Pr-requisites:	Material Science, Physics, and Chemistry basics.		
Frequency:	Yearly, in the Spring semester		
Requirements for credit points:	Award credit points are necessary to pass the module exam. The module exam (Theoretical+Practical) → [Written 120 min for Theoretical + 30 min Practical Exam] Student attendance is required in all classes. If the absences exceed 10%, the student will be terminated from the class. The students should succeed in the midterm & the lab exams; otherwise, the student will lose the chance of final exam participation & will be terminated from the class.		
Credit point:	5		
Grade Distribution:	The Grade is generated from the examination result(s) with the following 25% Midterm Exam 15% Practical Exam 60% Final theoretical Exam → (50% Theoretical Exam + 10% Practical Exam)		
Workload:	The workload is 130 h. It results from 70 h attendance and 60 h self-studies.		