

Date: <b>01/09/2023</b>	Examination No.: <b>3108</b>	Version: <b>01/09/2023</b>	Semester Start <b>01/09/2023</b>
<b>Module Name - Code</b>	<b>Material Science &amp; Technology- 3108</b>		
<b>Module Language:</b>	<b>English</b>		
<b>Responsible:</b>	<b>Dr. AHMED SAMIR / Lecturer</b>		
<b>Lecturer (s):</b>	<b>Dr. AHMED SAMIR / Lecturer</b>		
<b>College:</b>	College of Engineering – Salahaddin University-Erbil (SUE)		
<b>Duration:</b>	15-week – 3 <sup>rd</sup> semester		
<b>Course outcomes:</b>	Upon completing this course, the students will be able to Explain alloys and phase diagrams, Iron-Iron carbon diagrams and steel classification. Explain isothermal transformation, continuous cooling diagrams and different heat treatment processes. Clarify the effect of alloying elements on ferrous and non-ferrous metals. Summarize the properties and applications of non-metallic materials. Explain the testing of mechanical properties.		
<b>Course Content:</b>	Prospective history of materials, Material classification, Branches of material science, Properties and applications of different materials. Material testing Technologies DT and NDT, Ferrous and non-ferrous metals, Steel and cast iron, Phase diagrams and Iron -Carbon Phase diagram, Plastic deformation of metals, heat treatments of steel alloys, Non-ferrous alloys, Al-alloys, Supper alloys, Copper alloys.		
<b>Literature:</b>	William D Callister " material science and engineering"-2018 R A Higgins " engineering metallurgy" 1998		
<b>Type of Teaching:</b>	Weekly 4 h Theoretical Lectures + 2 h Practical Lectures.		
<b>Pr-requisites:</b>	Physics and Chemistry basics.		
<b>Frequency:</b>	Yearly, in the Fall semester		
<b>Requirements for credit points:</b>	Award credit points it is necessary to pass the module exam. The module exam (Theoretical+Practical) → [Written 120 min for Theoretical + 30 min Practical Exam] <b>Students with over 10% absent and/or grade records in continuous exams of less than 20% are not allowed to enter the final exam. Lab attendant and lab work is a must.</b>		
<b>Credit point:</b>	<b>5</b>		
<b>Grade Distribution:</b>	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)		
<b>Workload:</b>	The workload is 135 h. It results from 90 h attendance and 45 h self-studies.		