The University of Jordan
Faculty of Engineering
Industrial Engineering Department
First semester 2021/2022

Course name:	Properties of Engineering materials lab		
Course code:	0906274		
Credits hours	1		
Contact hours& room\office hours	13:30-16:30 (Sunday, Tuesday,Thursday), Wedensday (13:00-16:00)		
Course instructor's name, E-mail, and phone:	Prof Issam S. Jalham		
Course Coordinator:			
Text book:	Professor Dr.Issam S. Jalham, Experimental Laboratory Manual in Materials Science and Engineering (Second Edition), Jordan University Press, 2010.		
Other reference(s):	N/A		
Course Description:	Destructive testing, hardness test or tension test, nondestructive testing, macroscopic and microscopic testing using optical microscope, Phase diagram, carburizing, heat treatment and grain size calculation		
Providing Department:	Industrial Engineering		
Prerequisite Course:	IE0946273 - Properties of Engineering materials		
Course type	Mandatory		
Assessment Methods:	Method	Weight %	Date
	Reports	60%: (content 10%, Team work 10%, 40% Conduction of experiment	As will be appointed
	Final Exam	40%	As will be appointed

Course Learning Outcomes:	**CLO #**	**After successful completion of this course, the student will be able to**	**Mapping with The ABET SOs**	**Target %**
	CLO1	Prepare specimens for macro and macro-examination tests	**6**	
	CLO2	Conduct macro and micro-examination tests	**5, 6**	
	CLO3	Construct the phase diagram of a binary alloys	**5, 6**	
	CLO4	Conduct a mass transfer experiments and Heat treatment	**5, 6**	
	CLO5	Conduct the hardness test	**5, 6**	
	CLO6	Conduct a Non-destructive testing of materials	**5, 6**	

	Week	Topic
Brief list of topics	1	Introduction (Theory: 1, 2, 3, &4)
	2	Macroscopic Preparation & Examination of Metallic Materials
	3	Microscopic Preparation & Examination of Metallic Materials
	4	Grain size calculation
	5	Lecture (Theory: 5, 6, 7, 8 & 9)
	6	Phase Diagram (1) [Plotting]
	7	Phase Diagram (2) [Plotting]
	8	Phase Diagram (3) [Micro examination]
	9	Carburizing
	10	Heat-treatment after Carburizing
	11	Lecture (Theory: 10, 11, & 12)
	12	Hardness test (Brinell)
	13	Hardness test (Vickers)
	14	Hardness test (Rockwell)
	15	Lecture (Theory: 13, 14, & 15)
	ملاحظة: اللون االخضر سيكون اون الين واللون االصفر سيكون داخل الحرم الجامعي.	
Important Notes:	• Do not hesitate to ask questions • You are required to bring a notebook and take notes in classes. • Students are expected to attend every class session and they are responsible for all material, announcements, schedule changes, etc., discussed in class. • Discuss the assignments among yourselves • Don't Cheat; direct copying of others work will NOT be allowed or tolerated and will result in a reduction of grade. If you are found to be cheating in any way, on an exam or assignment, even signing the roll sheet for another student, you will be given an "F" for the course. There will be no exceptions. • All cases of academic dishonesty will be handled in accordance with university policies and regulations. JU policy requires the faculty member to assign ZERO grade (F) if a student misses 15% of the classes that are not excused, and 20% of the classes that are excused • Students are expected to be ready to take a quiz any time they have a class. There will be no make-up quizzes or home works. • Any students with disabilities who need accommodations in this course are encouraged to speak with the instructor as soon as possible to make appropriate arrangements for these accommodations.	

The B.Sc. in industrial Engineering program enables students to achieve, by the time of graduation the following program learning outcome (SOs)		
1	*An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics*	
2	*An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors*	
3	*An ability to communicate effectively with a range of audiences*	
4	*An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic,*	
5	*An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives*	
6	*An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*	√