



The University of Jordan
School of Engineering
Industrial Engineering Department
2nd semester 2020/2021

Course name:	Metallurgical Processes		
Course code:	0946513		
Credits hours	3		
Contact hours/room:	10:30 – 11:30 (SUN, TUE, THU)		
Course instructor's name, E-mail, and phone:	Prof.Dr. Issam S. Jalham		
	jalham@ju.edu.jo		
Course Coordinator:			
Text book:	Raymond A. Higgins, Engineering Metallurgy, Part 1 : Applied Physical Metallurgy, Latest edition.		
Other reference(s):	* Herman W. Pollack, Materials science and Metallurgy, prentice Hall Corp., 1981 or Latest edition * William D. Callister, Jr., 3 rd edition (or latest), John Wiley & Sons Inc., 1994 or Latest edition		
Course Description:	This course demonstrates the basic principles of metallurgical processes. As an introduction, there will be a definition of metallurgy terms, classification of metals and alloys, and an overview of the iron-iron carbon diagram and the influence of alloying elements on it. On the other hand, a general idea of the heat treatment of steels will be introduced. Moreover, the heat treatment of ferrous and non-ferrous alloys, cast iron, and welding will be demonstrated. Case studies will be given to support the knowledge		
Providing Department:	Industrial Engineering		
Prerequisite Course:	0906411		
Course type			
Assessment Methods:	Method	Weight %	Date
	Mid Exam	30%	
	*Project	15%	
	*other activities (HW, QUIZ)	5%	
	Final Exam	50%	As will be appointed
Course Learning Outcomes:	#	<i>After successful completion of this course, the student will be able to:</i>	SO
	CLO1	The student should be able to understand the significance of Designing and Planning of metallurgical processes, the terms related to this subject, and to understand how to calculate the parameters of each operation	4
	CLO2	The student should be able to work within teams and be prospective managers by a course project, which is accomplished by teams	5
	CLO3	ability to communicate effectively with a range of audiences	3, 5
	CLO4	The student should stay up to date with the processes pursue education out of the classroom by submitting a course project that discusses metallurgical processes other than presented in the classroom.	7

	Week #	Topic
Brief list of topics	1	Introduction
	1-2	Notes on specifications(<i>BS, ASTM, AISI, SAE, DIN, GOST, and UNS</i>)
	3-4	Conventional Heat treatment methods of steels
	5-8	Heat treatment methods of steels using I-T Diagrams
	8-10	Heat treatment methods of non-iron base alloys
	10-13	Heat treatment methods of castings and
	14-15	Heat treatment methods of weldings
	15-16	Project defense
Important Notes:	<ul style="list-style-type: none"> • <i>Do not hesitate to ask questions</i> • <i>You are required to bring a notebook and take notes in classes.</i> • <i>Students are expected to attend every class session and they are responsible for all material, announcements, schedule changes, etc., discussed in class.</i> • <i>Discuss the assignments among yourselves</i> • <i>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.</i> • <i>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</i> • <i>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.</i> • <i>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.</i> 	

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	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, environmental, and societal contexts	√
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	
7	ability to acquire and apply new knowledge as needed, using appropriate learning strategies	√