



**The University of Jordan**  
**School of Engineering**  
**Industrial Engineering Department**  
**Fall 2020**

<b>Course name:</b>	Metal Forming Processes		
<b>Course code:</b>	IE 0906315		
<b>Credits hours</b>	3		
<b>Contact hours/room:</b>	Section 1: 10:30 – 11:30 (Sun, Tue, and Thu @ Al-Mazar)		
<b>Course instructor's name, E-mail, and phone:</b>	Dr. belal gharaibeh		
	<a href="mailto:b.gharaibeh@ju.edu.jo">b.gharaibeh@ju.edu.jo</a> 22939		
<b>Course Coordinator:</b>			
<b>Textbook:</b>	Principles of Modern Manufacturing (Global Edition), by Mikel Groover, Wiley Publishers		
<b>Other reference(s):</b>	Materials Science and Engineering, 9 <sup>th</sup> edition, by William D Callister, Wiley publishers.		
<b>Course Description:</b>	Mechanical behavior and forming of metals, different types of mechanical behavior and main factors affecting it. Yield criteria, representative stress and representative strain, work due to plastic deformation, classification of forming processes with respect to strain rate and temperature. Temperature rise in dynamic forming. Bulk deformation processes: forging, extrusion, rolling, rod and wire drawing. Sheet forming processes: blanking, deep-drawing and bending		
<b>Providing Department:</b>	Industrial Engineering		
<b>Prerequisite Course:</b>	IE 0906273		
<b>Course type</b>	Mandatory		
<b>Assessment Methods:</b>	<b>Method</b>	<b>Weight %</b>	<b>Date</b>
	Project / Presentation	10	
	Mid Exam	30	
	quizzes	10	
	Final Exam	50	
<b>Course Learning Outcomes:</b>	<b>#</b>	<b>After successful completion of this course, the student will be able to</b>	<b>SO</b>
	<b>CLO1</b>	Understand the various bulk-metal deformation processes	<b>1</b>
	<b>CLO2</b>	The ability to choose the proper bulk-metal deformation process for the particular application	<b>2</b>
	<b>CLO3</b>	Understand the various sheet-metal deformation processes	<b>1</b>
	<b>CLO4</b>	The ability to choose the proper sheet-	<b>2</b>

		metal deformation process for the particular application	
	<b>CLO5</b>	The ability to work within a group, and deliver an effective presentation	<b>3</b>

<b>Brief list of topics</b>	<b>Week #</b>	<b>Topic</b>
	1-2	Introduction To Manufacturing Engineering (MfgE): What is manufacturing
	3-4	Mechanical Properties of Metals: Introduction to mechanical properties, stress-strain relationships; tensile properties
	5-8	Bulk-metal Deformation Processes: Introduction; rolling types and analysis; other deformation processes related to rolling, forging types and analysis; forging hammers and presses; other deformation processes related to forging, extrusion types and analysis; defects in extrusion; wire and bar drawing.
	9-12	Sheet-metal Deformation Processes
	13-14	Projects Discussion
	15	Revision
	16	Final Exam
	<b>Important Notes:</b>	<ul style="list-style-type: none"> <li>• Do not hesitate to ask questions</li> <li>• You are required to bring a notebook and take notes in classes.</li> <li>• Students are expected to attend every class session and they are responsible for all material, announcements, schedule changes, etc., discussed in class.</li> </ul>

*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, 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	An ability to acquire and apply new knowledge as needed, using appropriate learning strategies