



**The University of Jordan**  
**School of Engineering**  
**Industrial Engineering Department**  
**Fall 2024/2025**

Course name:	Metal Cutting processes		
Course code:	IE 0936415		
Credits hours	3		
Contact hours& room\office hours	11:30-12:30 S, T, Th. 12:30-13:30 S, T, Th		
Course instructor's name, E-mail, and phone:	Prof. Sa'ed A. Musmar		
	s.musmar@ju.edu.jo		
	5355000 ext. 22933		
Course Coordinator:	NA		
Text book:	Manufacturing Engineering and Technology SI 7 edition, 2014, by Kalpakjian& Schmid, Prentice Hall.		
Other reference(s):	Mikel Groover, Principles of Modern Manufacturing, 4th Edition Production Engineering, K.C Jain & A.K Chitale, y,		
Course Description:	Fundamentals of material removal processes, cutting tools, cutting fluids, mechanics of chip formation and types of chips: Merchant's theory for determining different forces involved in the orthogonal cutting, power consumption, different material removal processes, turning, drilling, shaping, milling, grinding, broaching, planning, reaming, vibration and chatter in material removal processes.		
Providing Department:	Industrial Engineering		
Prerequisite Course:	Metal forming (IE 0936315)		
Course type	Mandatory		
Assessment Methods:	Method	Weight %	Date
	In-class activities	20	
	Mid Exam	30	
	Final Exam	50	
Course Learning Outcomes:	#	After successful completion of this course, the student will be able to	SO
	CLO1	1. Understand the importance of manufacturing processes on daily life	4
	CLO2	Understand the various material removal processes	1
	CLO3	The ability to select proper machining parameters for a specific product;	1

			selection of machining conditions for turning, milling, grinding, drilling, etc.		
Brief list of topics	Week #	Topic			
	1	Introduction.			
	2-5	Elementary treatment of metal cutting theory (Fundamentals of material removal processes, cutting tools, cutting fluids, mechanics of chip formation and types of chips: Merchant’s theory for determining different forces involved in the orthogonal cutting and power consumption).			
	6-7	Milling Process Principles of working – principal parts and operations performed			
	8-9	Shaping and Planning Principles of working – principal parts – specifications, operations performed, machining time calculations.			
	10	Drilling: Principles of working, specifications, types, and operations performed			
	11	Grinding: Theory of grinding – classification of grinding machines			
	12-14	Introduction to Nonconventional Machining			
Important Notes:	<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><li>• Discuss the assignments among yourselves</li></ul>				
<b><i>The B.Sc. in industrial Engineering program enables students to achieve, by the time of graduation the following program learning outcome (SOs)</i></b>					
1	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics		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	
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		6	an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	
3	an ability to communicate effectively with a range of audiences		7	an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	
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				