



**The University of Jordan**  
**School of Engineering**  
**Industrial Engineering Department**  
**Fall 2021/2022**

Course name:	Metrology and Engineering Measurements			
Course code:	0936441			
Credits hours	3			
Contact hours&room\ Office Hours:	Section 1: Mon./Wed.11:30-13:00 Section 101: Mon./Wed. 11:30-13:00			
Course instructor's name, E-mail, and phone:	Lamees Al-Durgham			
	<a href="mailto:l.aldurgham@ju.edu.jo">l.aldurgham@ju.edu.jo</a>			
	22942			
Course Coordinator:	Lamees Al-Durgham			
Text book:	Raghavendra & Krishnamurthy (2013) . Engineering metrology and measurements, Oxford University press.			
Other reference(s):	- Beckwith, Marangoni, and Lienhard. Mechanical Measurements (2006), 6th Edition, -Curtis &Farago. Handbook of dimensional measurements.			
Course Description:	Catalog description: Errors, linear, angular contour measurements, sine bar, rotating table. Fits and tolerances: interchangeability, ISO shaft and hole systems of fits and tolerances. Thread metrology. Gear metrology; surface texture, out of roundness and flatness measurements. Flow and temperature measurements. Basic electrical measurements and sensing devices DC, AC bridge, and measuring systems, transducers, smart sensors and transmitters. Force, torque and strain measurements, design of load cells.			
Providing Department:	Industrial Engineering			
Prerequisite Course:	0906411 Manufacturing Processes-2/metal cutting			
Course type	Mandatory			
Assessment Methods:	Method		Weight %	Date
	Hws +Quizzes + project		20 points	
	Mid Exam		30 points	
	Final Exam		50 points	
Course Learning Outcomes:	#	After successful completion of this course, the student will be able to		SO
	CLO1	Understand the fundamentals of error analysis and uncertainty Metrology principles of linear and angular measurement		1
	CLO2	Instrumentation selection according to defect criterion expected		1
	CLO3	Learn how to analyze data and make engineering conclusion Study the various electrical and mechanical instrumentation devices		1
	CLO4	Using online education tools like EDx website for engineering measurement related topics		7

Brief list of topics	Week #	Topic
	1	Introduction.
	2	Error analysis and uncertainty
	3-4	Linear Measurements.
	4	Angular contour measurements, sine bar, rotating table.
	5	Roundness measurement
	6	Fits & Tolerances: interchangeability, ISO shaft and hole systems of fits & tolerances.
	7	Thread Metrology.
	8-9	Strain and stress measurements
	10-11	Measurement of pressure and fluid flow
	11-12	Temperature measurements
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> <li>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.</li> <li>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</li> <li>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.</li> <li>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.</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	<i>an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics</i>	6	<i>an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions</i>
2	<i>an ability to apply engineering design to producesolutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors</i>	7	<i>an ability to acquire and apply new knowledge as needed, using appropriate learning strategies</i>
3	<i>an ability to communicate effectively with a range of audiences</i>		
4	<i>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</i>		
5	<i>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</i>		