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

Course name:	Metrology and Engineering Measurements			
Course code:	936441			
Credits hours	3			
Contact hours&room\ Office Hours:	Sun/Tue/Thu 11:30-12:30 101 workshop			
Course instructor's name, E-mail, and phone:	Lamees aldirgham l.aldurgham@ju.edu.jo 22642			
Course Coordinator:	Belal Gharaibeh			
Text book:	Mechanical Measurements, 6th Edition, by Beckwith, Marangoni, and Lienhard, Prentice Hall, 2006.			
Other reference(s):	Machinery's Handbook 27th Edition, Industrial Press			
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	
	Quizzes	10	TBA	
	Mid Exam	30	TBA	
	Projects	10		
	Final Exam	50		
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	Quiz 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	Midterm/final
	CLO4	Using online education tools like EDx website for engineering measurement related topics	4	project
Brief list of topics	Week #	Topic		
	1	Introduction.		

Revised on: February 28, 2021

	2	Error analysis and uncertainty chapter 3 (text book 1)
	3-4	Linear Measurements. Chapter 11 (text book 1) + notes
	4	Angular contour measurements, sine bar, rotating table. (text book 2
	5	Roundness measurement (text book 2)
	6	Fits & Tolerances: interchangeability, ISO shaft and hole systems of fits & tolerances. (text book 2)
	7	Thread Metrology. (Notes)
	8-9	Strain and stress measurements Chapter 12 (text book 1)
	10-11	Measurement of pressure and fluid flow Chapter 14,15 (text book 1)
	11-12	Temperature measurements Chapter 16 (text book 1)

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*	*6*	*an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions*
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*	*7*	*an ability to acquire and apply new knowledge as needed, using appropriate learning strategies*
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*		