Course E-Syllabus

1	**Course title**	Research methods for engineering
2	**Course number**	0916302
3	**Credit hours**	2 hr.
	Contact hours (theory, practical)	4.16 hrs. per week 12:15-13:**30 Mo. Tu. We., and Th** (3.33 Lectures)
4	**Prerequisites/corequisites**	0916356
5	**Program title**	B.Sc. Industrial Engineering
6	**Program code**	
7	**Awarding institution**	Engineering
8	**School**	Engineering
9	**Department**	Industrial Engineering
10	**Level of course**	3rd year
11	**Year of study and semester (s)**	Summer 2020/2021
12	**Final Qualification**	
13	**Other department (s) involved in teaching the course**	-
14	**Language of Instruction**	English
15	**Teaching methodology**	☐Blended ☒Online
16	**Electronic platform(s)**	☒Moodle ☒Microsoft Teams ☐Skype ☒Zoom. ☐Others……
17	**Date of production/revision**	

18 Course Coordinator:

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19 Other instructors:

Name:
Office number:
Phone number:
Email:

Name:
Office number:
Phone number:
Email:

20 Course Description:

As stated in the approved study plan.
The nature and *types of research* and their characteristics. *Survey research*, the definition of the research *problem and its statement*, its theoretical framework and *develop* hypotheses related to the research, design elements, in addition to the classification of different variables. *Methods of sampling*, *analysis, quantitative and qualitative research data*, achieving results, *writing* research reports, in addition to the submission and the *presentation* of the research.

21 Course aims and outcomes:

A- Aims:
Enhance the students practice in the field of manufacturing and operations management.

B- Intended Learning Outcomes (ILOs):
Upon successful completion of this course, students will be able to:

ILO #	After successful completion of this course, the student will be able to	Mapping with The ABET SOs
ILO1	Identify types of research	**7**
ILO2	State a research problem	**3**
ILO3	Develop a research methodology	**3**
ILO4	Analyze and interpret quantitative and qualitative data	**6**
ILO5	Decide methods of sampling for analysis and experimentation	**6**
ILO6	Use engineering judgment to draw results and conclusions	**6**
ILO7	Select a proper survey	**5**
ILO8	Write research reports	**3**
ILO9	Present research effectively	**3**

22. Topic Outline and Schedule:

Week	Lecture	Topic	Teaching Methods*/platform	Evaluation Methods**	References
1 **11 July**	Mo. 1.1	- Course Orientation - - ENGINEERS AND WRITING	Synchronous Microsoft Teams	-	**Chapter 1**
	Tu. 1.2		Synchronous Microsoft Teams	-	
	We. 1.3		**Asynchronous and Self-Review** Microsoft Teams/ YouTube	-	Downloaded material
	Th. 1.4	ELIMINATING S PORADIC NOISE IN ENGINEERIN G WRITING	Synchronous Microsoft Teams	**Short Quiz**	**Chapter 2**
2					

18 July Eid Al-Adha Holydays					
3 **25 July**	Mo. 1.1	GUIDELINES FOR WRITING NOISE-FREE ENGINEERING DOCUMENTS	Synchronous Microsoft Teams	-	**Chapter 3**
	Tu. 1.2		Synchronous Microsoft Teams	-	
	We. 1.3		**Asynchronous and Self-Review** Microsoft Teams/ YouTube	-	Downloaded material
	Th. 1.4	LETTERS, MEMORANDA, EMAIL, AND OT HER MEDIA FO R ENGINEERS	Synchronous Microsoft Teams	**Short Quiz**	**Chapter 4**
4 **1 August**	Mo. 1.1	LETTERS, MEMORANDA, EMAIL, AND OT HER MEDIA FO R ENGINEERS	Synchronous Microsoft Teams	-	**Chapter 4**
	Tu. 1.2		Synchronous Microsoft Teams	-	
	We. 1.3		**Asynchronous and Self-Review** Microsoft Teams/ YouTube	-	Downloaded material
	Th. 1.4	WRITING COMMON ENGINEERING DOCUMENTS	Synchronous Microsoft Teams	**Short Quiz**	**Chapter 5**
5 **8 August**	Mo. 1.1	WRITING RESEARCH AND DESIGN REPORTS	Synchronous Microsoft Teams	-	**Chapter 6**
	Tu. 1.2		Synchronous Microsoft Teams	-	
	We. 1.3		**Asynchronous and Self-Review** Microsoft Teams/ YouTube	-	Downloaded material
	Th. 1.4	CONSTRUCTIN G ENGINEERIN G TABLES AND GRAPHICS	Synchronous Microsoft Teams	-	**Chapter 7**
6 **15 August**	Mo. 1.1	**Mid Exam**	Moodle	**Mid Exam**	
	Tu. 1.2	ACCESSING ENGINEERING INFORMATION	Synchronous Microsoft Teams	-	**Chapter 8**
	We. 1.3		**Asynchronous and Self-Review** Microsoft Teams/ YouTube	-	Downloaded material
	Th. 1.4	ENGINEERING YOUR SPEAKING	Synchronous Microsoft Teams	-	**Chapter 9**

7 **15 August**	Mo. 1.1	WRITING TO GET AN ENGINEERING JOB	Synchronous Microsoft Teams	-	**Chapter 10**
	Tu. 1.2		Synchronous Microsoft Teams	-	
	We. 1.3		**Asynchronous and Self-Review** Microsoft Teams/ YouTube	-	Downloaded material
	Th. 1.4	ETHICS AND DOCUMENTATION IN ENGINEERING WRITING	Synchronous Microsoft Teams	**Short Quiz**	**Chapter 11**
8 **22 August**	Mo. 1.1	ENGINEERING YOUR ONLINE REPUTATION	Synchronous Microsoft Teams	-	**Chapter 12**
	Tu. 1.2		Synchronous Microsoft Teams	-	
	We. 1.3		**Asynchronous and Self-Review** Microsoft Teams/ YouTube	-	Downloaded material
	Th. 1.4	**Final Examinations**	Moodle	**Final Examinations**	

- Teaching methods include Synchronous lecturing/meeting; Asynchronous lecturing/meeting.
- Evaluation methods include general activities, exercises, projects, short exams, and assignments …etc.

23 Evaluation Methods:

Opportunities to demonstrate achievement of the ILOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	Period (Week)	Platform
General activities, exercises, projects, short exams, quizzes and assignments	20	Variant	variant	E- Learning
Mid Exam	30	All Topics	9	E- Learning
Final Exam	50	All Topics	16	E- Learning

24 Course Requirements (e.g.: students should have a computer, internet connection, webcam, account on a specific software/platform…etc.):

University E-mail account
Internet connection
Computers/ Lab top/ or any other suitable device
Webcam

25 Course Policies:

A- Attendance policies:
According to JU- Rules, students are expected to attend every class session and they are responsible for all material, announcements, schedule changes, etc., discussed in class.

B- Absences from exams and submitting assignments on time:
There will be no make-up quizzes Exams or HomeWorks.
Make-up of final exam is subjected to the Dean permission and his approval.

C- Health and safety procedures:
Students are obliged to stick with JU rules and COVID protocol.

D- Honesty policy regarding cheating, plagiarism, misbehavior:
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.

E- Grading policy:

20% general exercises, project, and short exams, 30% Mid exam. and 50% final exam

F- Available university services that support achievement in the course:
University internet and electronic systems

26 References:

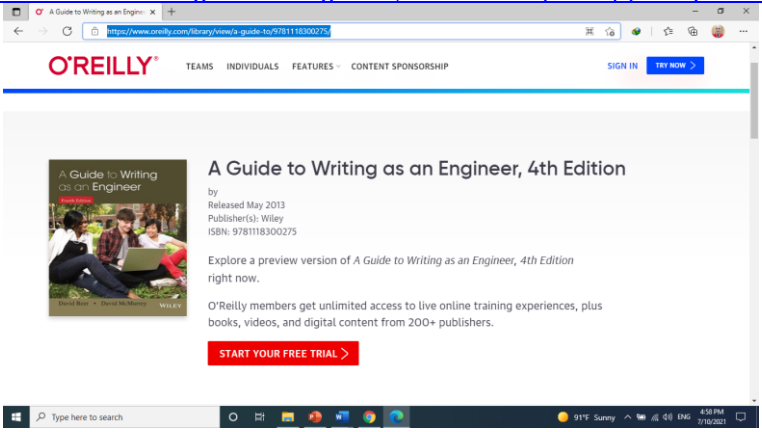
Required book(s), assigned reading and audio-visuals:

Video lectures Instructor's notes Handout materials

B- Recommended books, materials, and media:

- David F. Beer, David A. MacMurray, A Guide to Writing as an Engineer, 3rd, 4th, or 5th ed., Wiley, 2013.

A Guide to Writing as an Engineer, 4th Edition [Book] (oreilly.com)



- Uma Sekaran, Roger Bougie, Research Methods for Business: A Skill-Building Approach, 8th, 7th, or 6th Edition, Wiley.

27 Additional information:

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*	**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* *القدرة على تطوير وإجراء التجارب المناسبة وتحليل وتفسير البيانات واستخدام الحكم الهندسي لاستخلاص النتائج*
3	*An ability to communicate effectively with a range of audience* *القدرة على التواصل بفعالية مع مجموعة من الجماهير*	**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*		

Name of Course Coordinator: **Mohammad D. AL-Tahat** Signature: ----------Date: **21 June. 2021**

Head of Curriculum Committee/Department: Signature: ----------

Head of Department: **Mohammad D. AL-Tahat** Signature: ----------

Head of Curriculum Committee/Faculty: ---------- Signature: ----------

Dean: ---------- Signature: ----------