**The University of Jordan**
**Faculty of Engineering**
**Industrial Engineering Department**
**2nd tSemester 2020/2021**

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| Course name: | Properties of Engineering materials lab | | | | |
| Course code: | 0906274 | | | | |
| Credits hours | 1 | | | | |
| Contact hours& room\office hours | 13:30-16:40 (Sunday, Monday, Tuesday, Wednesday, Thursday) | | | | |
| Course instructor's name, E-mail, and phone: | Prof Issam S. Jalham | | | | |
| Course Coordinator: | | | | | |
| Text book: | Professor Dr.Issam S. Jalham, Experimental Laboratory Manual in Materials Science and Engineering (Second Edition), Jordan University Press, 2010. | | | | |
| Other reference(s): | N/A | | | | |
| Course Description: | Destructive testing, hardness test, tension test, nondestructive testing, metallic composition testing using optical microscope, electrical and thermal conductivity testing. | | | | |
| Providing Department: | Industrial Engineering | | | | |
| Prerequisite Course: | IE0946273 - Properties of Engineering materials | | | | |
| Course type | Mandatory | | | | |
| Assessment Methods: | Method | | Weight % | Date | |
| | Mid Exam | | - | As will be appointed | |
| | Reports | | 50% | As will be appointed | |
| | Final Exam | | 50% | As will be appointed | |
| Course Learning Outcomes: | # | After successful completion of this course, the student will be able to | | SO | |
| | CLO1 | Enable the student to prepare specimens for macro and macro-examination tests | | 6 | |
| | CLO2 | Enable the student to conduct macro and micro-examination tests | | 6,7 | |
| | CLO3 | Enable the student to construct the phase diagram of a binary alloys | | 6,7 | |
| | CLO4 | Enable the student to conduct a mass transfer experiments and Heat treatment | | 6,7 | |
| | CLO5 | Enable the student to conduct the hardness test | | 6,7 | |
| | CLO6 | Enable the student to conduct a Non-destructive testing of materials | | 6,7 | |
| Brief list of topics | Week # | Topic | | | |

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| | 1 | Introduction |
| | 2 | Macroscopic Preparation & Examination of Metallic Materials |
| | 3 | Microscopic Preparation & Examination of Metallic Materials |
| | 4 | Phase Diagram (1) [Plotting] |
| | 5 | Phase Diagram (2) [Plotting] |
| | 6 | Phase Diagram (3) [Micro examination] |
| | 7 | Carburizing + Heat Treatment |
| | 8 | Hardness test |
| | 9 | Non destructive testing |
| Important Notes: | • Do not hesitate to ask questions<br>• You are required to bring a notebook and take notes in classes.<br>• Students are expected to attend every class session and they are responsible for all material, announcements, schedule changes, etc., discussed in class.<br>• Discuss the assignments among yourselves<br>• 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.<br>• 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<br>• 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.<br>• 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)***

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|---|---|---|
| 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 | 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 | ability to acquire and apply new knowledge as needed, using appropriate learning strategies | |