The University of Jordan
School of Engineering
Department of Mechatronics Engineering
2nd Semester – A.Y. 2021/2022

Course:	Selected Topics in Mechatronics – 0908589 (3 Cr. – Elective Course) **Lecture Time (U, T, R: 11:30 – 12:30)**
Instructor:	Dr. Mutaz M. Hamdan *Office:* MX, *Telephone:* 5355000, *Email*: m.hamdan@ju.edu.jo *Office Hours:* (U, T: 10:30-11:30)
Course Website:	http://elearning.ju.edu.jo
Catalog Data:	Hierarchy of plant communication systems, field equipment, Distributed Control System (DCS), SCADA systems, Supervisory control and production control, Man-Machine Interface (MMI). Local area networks, OSI network architectures, serial communications, IEEE 802.xx standards, Local area networks for industrial applications, Field buses, Hart protocol, Foundation Field Bus, and Wireless communication. Smart instruments. Examples of industrial DCS systems
Prerequisites by Course:	Consent of Department.
Textbook:	Modern Distributed Control Systems: A comprehensive coverage of DCS technologies and standards, by Moustafa Elshafei, CreateSpace Independent Publishing Platform, 2016.
References:	• *Distributed Computer Control System by A. Sowmya, J. Park, Christopher Greenwell (editors). Publisher: (IFAC), 2000* • *Understanding Distributed Processor Systems for Control by Samuel M. Herb, (ISA), 1999*
Schedule & Duration:	15 Weeks, 45 lectures (60 minutes each) plus exams.
Minimum Student Material:	Text book and class handouts.
Instructional Methods	1. Lecture sessions. 2. Projects.
Minimum College Facilities:	Classroom with whiteboard and projection display facilities and library.
Course Objectives:	1. Identify and analyze the architecture of plant automation networks and DCSs. 2. Describe the functions of DCSs and the difference between PLCs, SCADA, and DCSs. 3. Describe the architecture and the functions of SCADA systems. 4. Describe the architecture and features of high reliability real-time computers for control applications. 5. Examine the various standards for data communications for control applications and be able to select the proper one for specific instrumentation/control applications. 6. Differentiate the types of Field buses, their protocols, and their strength/weak points. 7. Describe the architecture of wireless communication systems, and their strength/weak points.

Ground Rules:

- **Attendance:**

Students are expected to attend EVERY CLASS SESSION and they are responsible for all material, announcements, schedule changes, etc., discussed in class. The university policy regarding the attendance will be strictly adhered to.

- **Make up Examinations**

There will be no make up exams for any exam that will be taken during the course. exceptions to this rule is restricted only to the following cases:-
1. Death of only first order relatives (father, mother, sister, or brother).
2. Hospital entry (in-patient) during thr time of the examination.

Any other cases will be given the zero mark in the corresponding exam.

Assessments:
Grading policy:

Assessments	Mark
Project	20
Midterm Exam	30
Final Exam	50
Total	100

Last Updated: March. 2022