The University of Jordan
School of Engineering
Mechatronics Engineering Department
1st Semester – A.Y. 2019/2020

Course:	**Automation and Programmable logic controller – 0908461 (3 Cr. – Required)**
Instructor:	Dr. Musa Al Yaman
	Office: CH305, Mechatronics Engineering Department, Telephone: 5355000 ext. 23032
	Office Hours: (Sum, Tus:9.00-10.00 am), (Mon, Wed: 09.30-11.00)
Course website:	http://elearning.ju.edu.jo
Catalog description:	Introduction to Automation, Programmable Logic Controllers (PLC), PLC hardware, PLC software, SCADA Systems and Computer Numerical Control (CNC). CNC hardware, CNC software, Lab experiments concentrate on familiarizing the student with the concepts studied in class especially CNC and PLC programming and applications.
Prerequisites by course:	**0908353** Automatic Control Systems (pre-requisite)
Prerequisites by topic:	1. Digital Logic fundamentals 2. Microprocessor and Microcontrollers 3. Programming with MATLAB.
Textbook:	**Industrial Automation and Process Control. Jon Stenerson Prentice Hall 1 edition 2002, ISBN-13: 978-0130330307**
References:	1. • Industrial Automation: Hands On , Frank Lamb , Publisher McGraw-Hill Professional; 1 edition 2013 ISBN-13: 978-0071816458
	2. • Automation, Production Systems, and Computer Integrated Manufacturing, Mikell P. Groover, Printice Hall, 2008, 3rd Edition. ISBN-13: 978-0132393218Modern Control Engineering , Katsuhiko Ogata, 5th Edition n, Prentice Hall
Schedule:	16 Weeks, 48 lectures (50 minutes each) and exams.
Course goals:	1. Recognize the concept of automation 2. Identify the benefits and requirements of automation 3. Provide the student with the knowledge in the Programmable Logic Controllers (PLC), and SCADA systems 4. Provide the student with the knowledge in the Computer Numerical Control (CNC) .

Course learning outcomes (CLO) and relation to ABET student outcomes (SO):

Upon successful completion of this course, a student should: **[SO]**

1.	Identify the benefits and requirements of automation	**[4]**
2.	Recognize the different types of PLCs by visiting different factories	**[4]**
3.	Identify the strategies of SCADA and HMI systems and CNC	**[4]**
4.	Practice the oral communication skills in a form of presentation	**[4]**
5.	Practice the written communication skills in a form of report	**[4]**

Course topics: **Hrs.**

1.	Manufacturing operations: types of manufacturing	**1**
2.	Introduction to automation: automation types and strategies	**2**
3.	Discrete control: programmable logic controllers (PLC) and personal computers (PC)	**18**
4.	Supervisory Control And Data Acquisition (SCADA) Systems	**9**
5.	Numerical control: computer numerical control (CNC)	**12**
6.	Human Machine Interface (HMI)	**6**

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 makeup 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 the time of the examination.
Any other cases will be given the zero mark in the corresponding exam.

• **Special Notes**
1. Seating plan will be as given in the attendance sheet.
2. Students creativity is welcomed and will receive additional marks

Assessment & grading policy:

Quizzes	10%
Projects (SO-4)	15%
Midterm	25%
Final Exam	50%
Total	**100%**

Last Revised: October 2, 2019