

## Faculty of Engineering & Technology

### Special Topics in Mechatronics

#### Information :

**Course Code :** MKT 599

**Level :** Undergraduate

**Course Hours :** 2.00- Hours

**Department :** Specialization of Mechatronics Engineering

#### Instructor Information :

Title	Name	Office hours
Professor	Mohamed Abolella Abdellatif Gaber	
Assistant Lecturer	Mohamed Abd Elbar Shams Adin Ali	
Teaching Assistant	Bahaa Eldin Sayed Bahaa Eldin Sayed	

#### Area Of Study :

1. Describe, analyze and operate the mechatronics training Amatrol.
2. Define the specification for sensors in each module.
3. Define the specification for actuators in each module
4. Understanding the PLC control program for each module and interaction.
5. Operation of the robot arm, SCADA interfaces and teach pendant.

#### Description :

Selected topics that meet student interests and reflects recent trends in one of the fields of mechatronics engineering.

This offering uses the Amatrol training system. Using system approach to let the student get familiar and have hands on with real mechatronics process. The process have 7 modules each of different task. Student will be able to operate and troubleshoot the system.

#### Course outcomes :

##### **a.Knowledge and Understanding: :**

1 -	a1. Define the amatrol stations.
2 -	a2. State the process in all steps.

##### **b.Intellectual Skills: :**

1 -	b1. Understands the control of process and sensors and actuators.
-----	---

##### **c.Professional and Practical Skills: :**

1 -	c1. Operate the different stations.
2 -	c2. Operate the robot arm.
3 -	c3. Understand how to troubleshoot problems.
4 -	c4. Understand the process of replacing defective item.

#### **d.General and Transferable Skills: :**

1 -	d1. Manage tasks, time, and resources.
2 -	d2. Search for information and engage in life-long self-learning discipline
3 -	d3. Collaborate effectively within multidisciplinary team.

#### **Course Topic And Contents :**

<b>Topic</b>	<b>No. of hours</b>	<b>Lecture</b>	<b>Tutorial / Practical</b>
Introduction		2	2
Stations and overview		2	2
Interfacing		2	2
Sensors and identification		2	2
Operation of modules and safety		2	2
PLC control of stations		2	2
Identifying the ladder control of stations		2	2
Robot arm and its control		2	2
Robot arm structure and sensors		2	2
Torqueing and storage stations		4	4
Indexing station		2	2
Project discussion		4	4
Project Presentation		2	2

#### **Course Assessment :**

<b>Methods of assessment</b>	<b>Relative weight %</b>	<b>Week No</b>	<b>Assess What</b>
1st Midterm	15.00	6	
2nd Midterm	15.00	11	
Assignments, Participation, & Quizzes	10.00		
Final Exam	40.00		
Project.	20.00	13	

#### **Course Notes :**

Notes and Amatrol catalogue