

Faculty of Engineering & Technology

Smart Systems

Information :

Course Code : MKT 590

Level : Undergraduate

Course Hours : 2.00- Hours

Department : Specialization of Mechatronics Engineering

Area Of Study :

1. Describe and analyze smart system components and generations.
2. Define and recommend the specification for sensors and actuators for smart system.

Description :

Introducing the concept of smart systems incorporating functions of sensing, actuation, and control in order to describe and analyze a situation, and make decisions. Generations of smart systems: First-generation: object recognition devices, driver status monitoring, and multifunctional devices for minimally invasive surgery. Second-generation: active miniaturized artificial organs like cochlear implants or artificial pancreas, advanced energy management systems, and environmental sensor networks. Third generation, that combines technical intelligence and cognitive functions so that they can provide an interface between the virtual and the physical world.

Course outcomes :

a. Knowledge and Understanding: :

- 1 - Define the components of smart systems
- 2 - State the three generations of smart systems.

b. Intellectual Skills: :

- 1 - Select the suitable components for smart systems regarding type of sensors and actuators

c. Professional and Practical Skills: :

- 1 - Select the sensor and actuator model from making company website

d. General and Transferable Skills: :

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

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
Introduction	6	4	2
Components and generations	7	4	3

Course Topic And Contents :

Topic	No. of hours	Lecture	Tutorial / Practical
First generation	6	4	2
Second generation	6	4	2
Third generation	6	4	2
Interface physical and virtual world	6	4	2
Case studies	8	6	2

Teaching And Learning Methodologies :

Interactive Lecturing

Problem solving/ Experiential learning

Discussion

Project

Research

Course Assessment :

Methods of assessment	Relative weight %	Week No	Assess What
1 st Midterm	15.00	6	
2 nd Midterm	15.00	11	
Assignments, Participation, & Quizzes	10.00		
Final Exam	40.00	16	
Project.	20.00	13	

Recommended books :

Instructor notes