

Home Automation

- 1. Course number and name:** 020DOMES3 Home Automation
- 2. Credits and contact hours:** 4 ECTS credits, 2x1:15 contact hours per week
- 3. Name(s) of instructor(s) or course coordinator(s):** Antoine Sawaya
- 4. Instructional Materials:**
 - Instructor's Class Notes.
 - KNX systems Arguments and Basic concept (KNX Associations).
- 5. Specific course information**
 - a. Catalog description:**

Introduction to Home Automation. Communication mode: Dry contact, Serial, Infrared and TCP-IP. Protocol: Wired and Wireless, Dedicated and Universal. Type of control: Lighting, electrical curtains, HVAC and Audio video equipment. Interface with other systems: Building management systems (BMS), Fire Alarm, Intrusion, CCTV and intercom. Internet of things (IOT). User Interface: Binary input, Wired Keypads, Wireless remote control, Touch screen and Mobile / Tablet applications. Concept of electrical installation relative to home automation complete with the relative electrical panel. Load schedule with the number of circuits and type of control. Home Automation devices. KNX Protocol. ETS software. Concept of typical project (requirement and recommendations).
 - b. Prerequisite:** None.
 - c. Selected Elective** for EE and ME students.
- 6. Educational objectives for the course**
 - a. Specific outcomes of instruction:**
 - Introduce the students to the basics of home automation.
 - Present communication modes, complete the type of existent protocols.
 - Enhance the relation between home automation and internet of things (IOT).
 - Develop the type of control per different load such as lighting, electrical shutters, HVAC, and Audio video equipment.
 - Identify interface with other related systems such as BMS, intrusion, Access control, CCTV and Fire Alarm.
 - Introduce the User interface for the home automation system.
 - Expose students to the regulation of electrical installation related to the home automation requirements.
 - Familiarize the students to home automation equipment.
 - Understand the KNX protocol complete with the ETS software.
 - Conceive Home Automation project in terms of marketing/sales and technical themes.

b. PI addressed by the course:

PI	1.1	1.2	1.3	2.1	2.2	2.3	2.4	2.5	4.2
Covered	x	x	x	x	x	x	x	x	x
Assessed	x	x	x	x	x	x	x	x	

7. Brief list of topics to be covered

- Introduction to Home Automation. (1 Lecture).
- Communication Mode: Dry contact, Serial, Infrared and TCP-IP. (2 Lectures).
- Protocol: Wired and Wireless, Dedicated and Universal. (2 Lectures).
- Type of control: Lighting, electrical curtains, HVAC and Audio video equipment. (4 Lectures).
- Interface with other systems: Building management systems (BMS), Fire Alarm, Intrusion, CCTV and intercom. (1 Lecture).
- Internet of Things (IOT). (1 Lecture).
- User Interface: Binary input, Wired Keypads, Wireless remote control, Touch screen and Mobile / Tablet applications. (2 Lectures).
- Concept of electrical installation relative to home automation complete with the relative electrical panel. (1 Lecture).
- Load schedule with the number of circuits and type of control. (1 Lecture).
- Home Automation devices. (1 Lecture).
- KNX Protocol. (1 Lecture).
- ETS software. (2 Lectures).
- Concept of typical project (requirement and recommendations). (1 Lecture).
- Distribution of project on students.
- Evaluation on the project process per group of students. (4 Lectures).