



Laboratory Type	Embedded Systems Lab (1)		مختبر النظم المتضمنة (1)																								
Building	South Building – 3 rd Floor																										
Capacity	14 hp PCs - 119.4 Area (m2)																										
Equipment (Furniture – Appliances)	1	14 MicroTRAK/STM32F7-KU Training Kits with: <ul style="list-style-type: none"> ▪ MINIMAX/STM32F745-KU microcontroller board ▪ Universal I/O module: that has 32 switches to control the microcontroller inputs and 32 LEDs to indicate port status. ▪ TB-1 peripheral board: that includes many features such as 3 Traffic light LED's (red, yellow, green), a programmable buzzer, 2 switch inputs, and many other features. ▪ Expansions pins for extra peripherals: EEPROMS, RTC, motors. ▪ Keypad ▪ LCD ▪ Bluetooth module ▪ Adapter for the power supply ▪ USB connections ▪ Serial Connection 																									
	2	The laboratory is equipped with: <ul style="list-style-type: none"> ▪ Extron Control Touch Panel- for speaker & ceiling camera ▪ Projector & display curtain ▪ BENQ Projector & SMART Board M600 DVit ▪ Wall white Board. ▪ Digital ceiling Camera ▪ Medium size Network Black cabinet 																									
	3	<ul style="list-style-type: none"> ▪ 14 PCs are equipped with: Windows10 Enterprise, OS, MS Office 365 software <table border="1"> <tbody> <tr> <td>Vision</td> <td>7-Zip</td> </tr> <tr> <td>Adobe</td> <td>PyCharm Community Edition</td> </tr> <tr> <td>Python</td> <td>SQL Developer</td> </tr> <tr> <td>VLC Media Player</td> <td>Eclipse for JAVA</td> </tr> <tr> <td>Cisco Packet Tracer</td> <td>MATLAB</td> </tr> <tr> <td>IMB Rational Software</td> <td>Visual Studio</td> </tr> <tr> <td>Safe Exam Browser</td> <td>Voice Recorder</td> </tr> <tr> <td>IBM Rational Software Architect Designer</td> <td>Mixed Reality Portal</td> </tr> <tr> <td>Quartus II 13.1(64-bit) Web Edition)</td> <td>Paint 3d, StarUML</td> </tr> <tr> <td>Micro-IDE, Arduino</td> <td>Netop Vision Pro</td> </tr> <tr> <td>Edsim 51</td> <td>NetSupport, Snip & Sketch</td> </tr> <tr> <td>Keil uVision5.</td> <td></td> </tr> </tbody> </table> <p>The laboratory is equipped with: Electricity sockets & network points connected to the internal network of Kuwait University.</p>		Vision	7-Zip	Adobe	PyCharm Community Edition	Python	SQL Developer	VLC Media Player	Eclipse for JAVA	Cisco Packet Tracer	MATLAB	IMB Rational Software	Visual Studio	Safe Exam Browser	Voice Recorder	IBM Rational Software Architect Designer	Mixed Reality Portal	Quartus II 13.1(64-bit) Web Edition)	Paint 3d, StarUML	Micro-IDE, Arduino	Netop Vision Pro	Edsim 51	NetSupport, Snip & Sketch	Keil uVision5.	
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4	<ul style="list-style-type: none"> ▪ Instructor Table & Chair ▪ Island Pinch Shelving + Wall cabinets ▪ 13 Long Table & 13 Chairs ▪ Cabinets & Drawers 																										
5	<ul style="list-style-type: none"> ▪ Good ventilation & proper lighting in the laboratory. ▪ Suitable temperature for summer and winter climates. ▪ The presence of curtains to prevent sunlight from entering the laboratory to maintain the devices. ▪ The presence of the display screen in a suitable place for the teacher and students. 																										



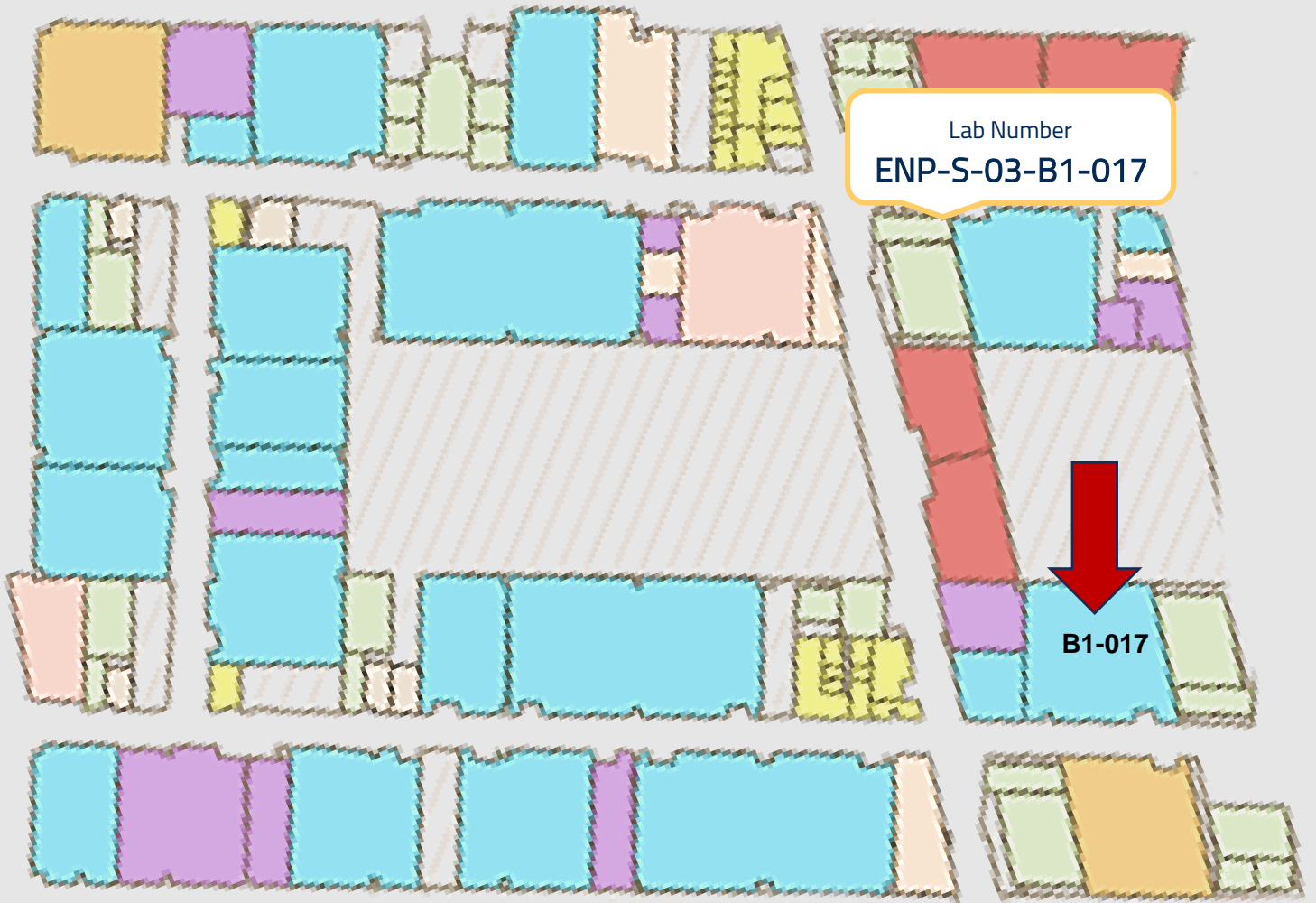
Computers Status	Model: Intel(R) Core (TM) 17-8700 CPU @ 3.20GHz 3.19 GHz Memory: 16.0 GB RAM Printer: KYOCERA
Accommodation for people of determination	<ul style="list-style-type: none"> ▪ Allocating seating place for the disabled on the edges of corridors and rows, on flat places, near services and emergency doors. ▪ The availability of the necessary spaces that allow the disabled to move and see clearly. ▪ The laboratory has computers equipped with talking and screen enlargement programs. ▪ Doors open outward ▪ The presence of fire-fighting equipment near the laboratory. ▪ Evacuation Plan/Evacuation Officer: Presence of safety guidelines to evacuate the plant in the event of a fire. ▪ Wiring extensions are safe and do not pose a risk to students. ▪ Easy access to the primary electrical control switch to shut down all devices.
Safety & Security	<ul style="list-style-type: none"> ▪ Doors open outward with electronic card system. ▪ Fire-fighting equipment inside the laboratory: Fire Extinguisher, Fire Blanket & First Aid Kit. ▪ Evacuation Plan: Presence of safety guidelines to evacuate the plant in the event of a fire. ▪ Wiring extensions are safe and do not pose a risk to students. ▪ Easy access to the primary electrical control switch to shut down all devices.
Laboratory Uses	<ul style="list-style-type: none"> ▪ Introduction to Embedded Systems Laboratory, CpE-364 course ▪ Embedded Systems course's practical exams.
Officials	Eng. Basma Alfahad
Awareness & Guidance	The presence of instructions for correct use & instructions to maintain laboratory equipment,

- The Safety & Security Dept. Emergency Line (ext. 3333, direct line 24893333) available 24hours/day.
- Scan the QR code to report an issue / malfunction.



This laboratory covers experimental activities for the "Embedded Systems" course and its lab (CpE-363 and CpE-364). It supports both software & hardware-oriented projects in embedded system course. Students get to program the ARM Cortex-M microcontroller in assembly and C languages using the MINIMAX/STM32F745-KU microcontroller board, a highly expandable micro-controller system with a Windows-based Integrated Development Environment and a built-in simulator/debugger. Students conduct experiments and mini projects that provide them with hands-on experience on interfacing microcontrollers with various input/output devices.

يغطي هذا المختبر الأنشطة التجريبية لمقرر "النظم المتضمنه" ومختبرها (CpE-364 و CpE-363) وهو يدعم كلا من المشاريع الموجهة نحو البرامج والأجهزة في مقرر النظم المتضمنه. يقوم الطلاب ببرمجة متحكم ARM Cortex-M بلغات Assembly و C باستخدام لوحة متحكم MINIMAX / STM32F745-KU , وهو نظام تحكم دقيق قابل للتوسيع بدرجة كبيرة مع بيئة تطوير متكاملة قائمة على Windows ومحاكي / مصحح أخطاء مدمج. يقوم الطلاب بإجراء تجارب ومشاريع صغيرة توفر لهم خبرة عملية في ربط المتحكمات الحقيقية بمختلف أجهزة الإدخال / الإخراج



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