



Lab Card

Lab Number
ENP-S-03-C1-039

Laboratory Type	Internet of Things (IoT) Lab		مختبر انترنت الأشياء
Building	South Building – 3 rd Floor		
Capacity	15 hp PCs - 58.2 Area (m2)		
Equipment (Furniture – Appliances)	1	2 TEKTRONIX CFG253 + 2 Weller WSD 81	
	2	2 OSCILLOSWPE-TEKTRONI -TEK-2211	
	3	<ul style="list-style-type: none"> ▪ 3Art.-No. 536630: Safe and precise transport of workpieces ▪ 3Art.-No. 536631: Storage and retrieval of workpieces and containers ▪ 3Art.-No. 536632: Two processing stations with pneumatic transfer for safe workpiece transfer ▪ 3Art.-No. 536633: Recognition and sorting of the different workpieces ▪ 2Art.-No. 536634: Automated training and simulation factory ▪ 6Art.-No. 050464: Conveyor belt simulates the transport of the workpieces 	
	4	<ul style="list-style-type: none"> ▪ MAXHUB Interactive Intelligent Panel Model C8630 ▪ 1 Digital Camera on tripod ▪ 8 TP-Link TG-3468 PCIe Gigabit Ethernet 10/100/1000Mbps PCI Express Adapter Card ▪ 7 Siemens SIMATIC IOT2050 ▪ 1 D Link Router- Model DSL-2750U ▪ Instructor Table, Chair & 3-Drawer bedside table ▪ 11 long Black Table + 1 long red Table ▪ 34 Chairs & 1 round Chair ▪ 5 Transport Case Agile Production Simulation + 4 Red Metal (2-Doors) cabinet + 1 Red Small Wheeled cabinet ▪ White board + Silver Hole Hanger Board + Black Metal Box Truck 	
	5	<ul style="list-style-type: none"> ▪ <u>15 PCs are equipped with:</u> electricity sockets & network points connected to the internal network of Kuwait University. <p>PCs are equipped with: Windows10 Enterprise, OS, MS Office 365 software, antivirus programs, Cisco Packet Tracer, BM Rational Software Architect Designer, Eclipse for Java, MATLAB R2019b, Google Chrome, Safe Exam Browser v3.3.1.388, VLC media player, NetSupport, Microsoft Edge Vision v9.7, Adobe 7-Zip, PyCharm Community Edition & Python 3.10 (64-bit)</p>	
	6	<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 & students. 	
Computers Status	Model: Intel(R) Core (TM) 17-8700 CPU @ 3.20GHz 3.19 GHz Memory: 16.0 GB RAM		
Accommodation for people of determination	<ul style="list-style-type: none"> ▪ Allocating seating places 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. <p>Easy access to the primary electrical control switch to shut down all devices.</p>		

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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	<p>This lab facilitates students' learning (core & elective subjects) in various fields like:</p> <ul style="list-style-type: none"> • IoT engineering, elective • Algorithm development • Machine learning • Data analytics.
Officials	Dr. Mohamad Awad
Awareness & Guidance	The presence of instructions for correct use & instructions to maintain laboratory equipment,

Internet of Things (IoT) Lab was established in cooperation with the international company Siemen in the Department of Computer Engineering - College of Engineering and Petroleum - Kuwait University. This lab facilitates students' learning in various fields like IoT engineering, algorithm development, machine learning, & data analytics. Thus, preparing graduate computer engineers to contribute to building a new Kuwait. This laboratory is unavailable in any other local educational institution or research institute in Kuwait. The laboratory consists of miniature models of oil well-drilling machine factories, parts of modern cities, and cloud computing programs. The student can design algorithms and computer programs to collect data and information about available models and make the appropriate decisions to improve their performance. For example, it can create algorithms to measure the extent of traffic and control a set of traffic lights to reduce traffic congestion. The student can also develop algorithms to monitor the status of oil well drilling machines and predict malfunctions. It is also possible to build a model of a small factory and control it. All experiments proposed in this laboratory facilitate teaching core and elective subjects in the Computer Engineering program at the College of Engineering and Petroleum at Kuwait University.

تم انشاء مختبر انترنت الأشياء بالتعاون مع شركة سيمنز العالمية، يسهل هذا المختبر تعلم الطلاب هندسة إنترنت الأشياء وتطوير الخوارزميات والتعلم الآلي وتحليلات البيانات. لا يتوفر هذا المختبر في أي مؤسسة تعليمية محلية أخرى أو أي معهد بحثي في الكويت. يتكون المختبر من نماذج صغيرة لمصانع آلات حفر آبار بترول وأجزاء من مدن حديثة بالإضافة إلى برامج حوسبة سحابية. يستطيع الطالب تصميم خوارزميات وبرامج حاسوب لجمع البيانات والمعلومات الخاصة بالنماذج المتوفرة واخذ القرار المناسب لتحسين أدائها. مثلاً على ذلك، يستطيع تصميم خوارزميات لقياس مدى الحركة المرورية والتحكم بمجموعة إشارات ضوئية بهدف تخفيف زحمة السير. كما يستطيع الطالب تصميم خوارزميات لمتابعة حالة آلات حفر الآبار النفطية وتوقع الأعطال. كما يمكن بناء نموذج لمصنع صغير والتحكم به. إن جميع التجارب المقترحة في هذا المختبر تدعم التدريس في المواد الأساسية والاختيارية في برنامج هندسة الكمبيوتر في كلية الهندسة والبتترول في جامعة الكويت.





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