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الصندوق الاستئماني الأوروبي 'مدد'

Empowering Syrian Undergraduates to Join MicroMasters Programs (SYMPRO): Toward Career-Focused and Affordable Graduate Studies (Short project)

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Outline

- Challenges of higher Education for vulnerable groups
- MicroMasters Programs
- Project Phases
  - **Needs analysis** and participants selection
  - **Phase 1:** Local empowerment/ conducted at Yarmouk University
  - **Phase 2:** MOOCs-Based empowerment/ taking a real MicroMasters courses
- Challenges in the project Implementation

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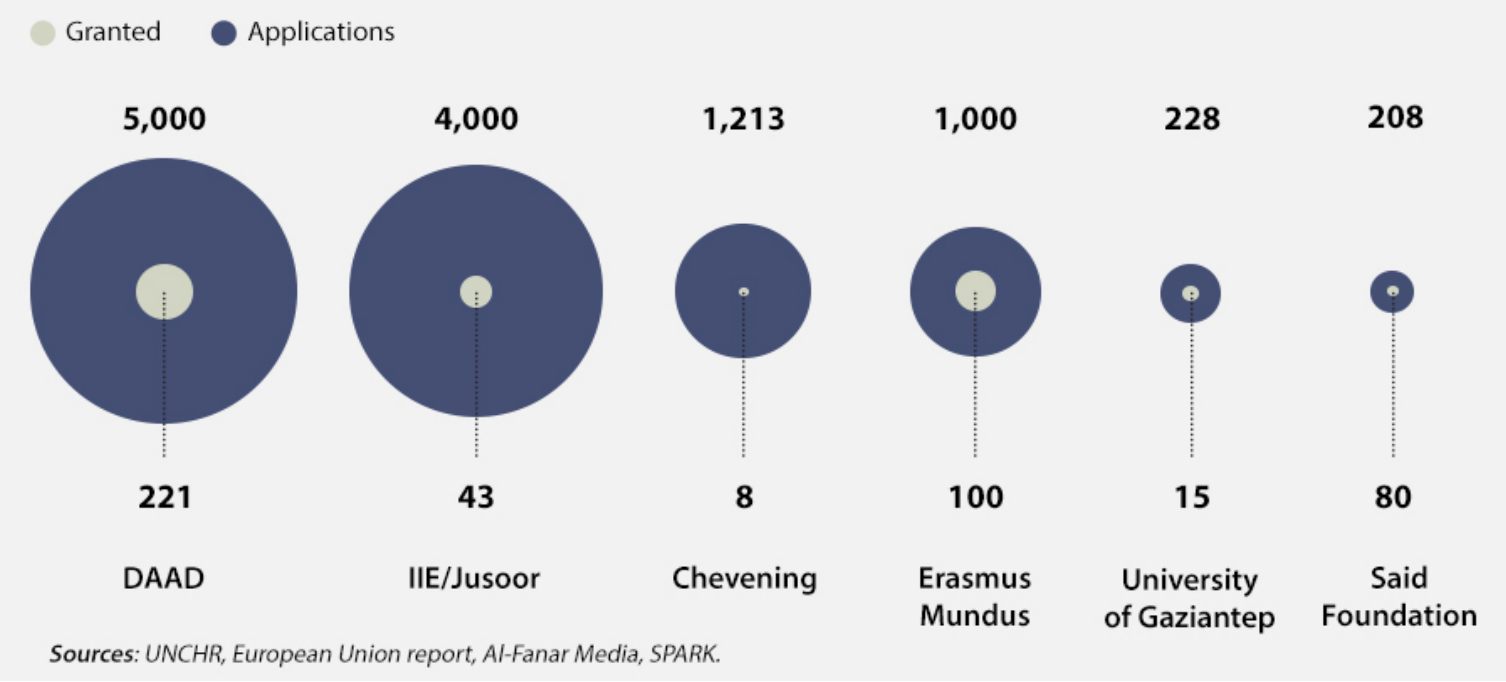
Higher Education Challenges

- Syrian Students' demand for scholarships overwhelms available grants



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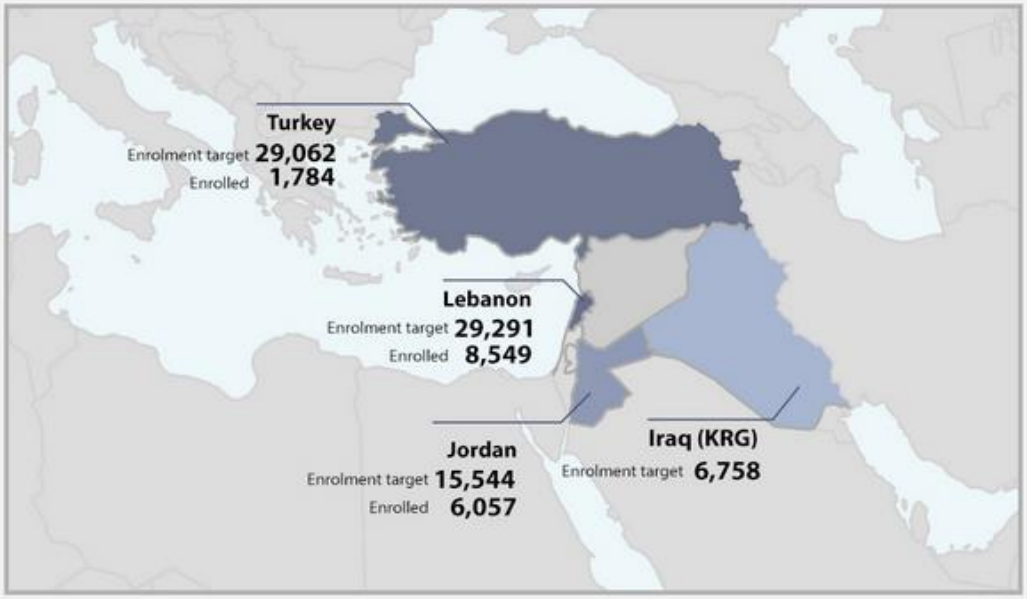
Higher Education Challenges

- Accessibility and Cost: Fewer than 6% of Syrian youth ages between 18 to 24 are enrolled in the Universities



Sources: UNCHR, European Union report, Al-Fanar Media, SPARK.

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Higher Education Challenges

- Joining Post-graduate (Master Level) Programs
- Students need advanced skills to get scholarships program. Especially, for post-graduate courses
- Example Requirement
- ***"We will identify a highly talented and qualified cohort to participate in a special certificate program.***

- ***"Applicants will be tested in both maths and English language skills prior to being accepted to the program"***

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Response to Challenge 3

- A graduate level program that is
  - Accessible
  - Cheap
  - Bridge the Gap between education and the workplace
  - Counts towards getting a degree

MicroMasters

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MicroMasters Programs

- A series of online graduate level courses from top universities designed to advance career.
- **MicroMasters** credentials bridge the gap between education and the workplace.
- Students may apply to the university offering credit for the **MicroMasters certificate**
- If accepted, can pursue an accelerated and less expensive Master's Degree.
- Once you've successfully earned a **MicroMasters** credentials(i.e. 50-60% of a master credits), you can apply to an on-campus program that recognizes the **MicroMasters** credits.
- If you're accepted, the digital credential counts as credit toward a portion of the degree, resulting in an accelerated and much more cheaper program.

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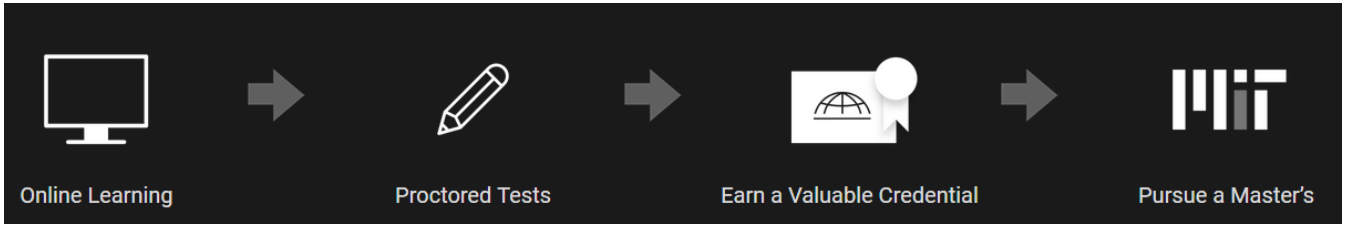
How it Works?



"The material I am learning in the MicroMasters program is useful every single day and has helped me become very effective in a leadership role."
— Javier, Supply Chain Engineer, Google | United States

Save Money & Time

Convenient & Flexible

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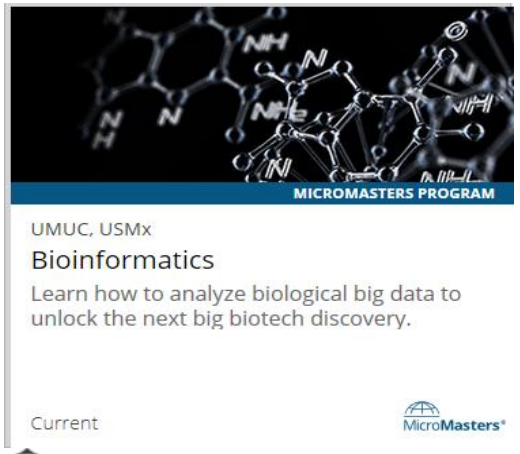
Bridging the Gap between Education and the Workplace



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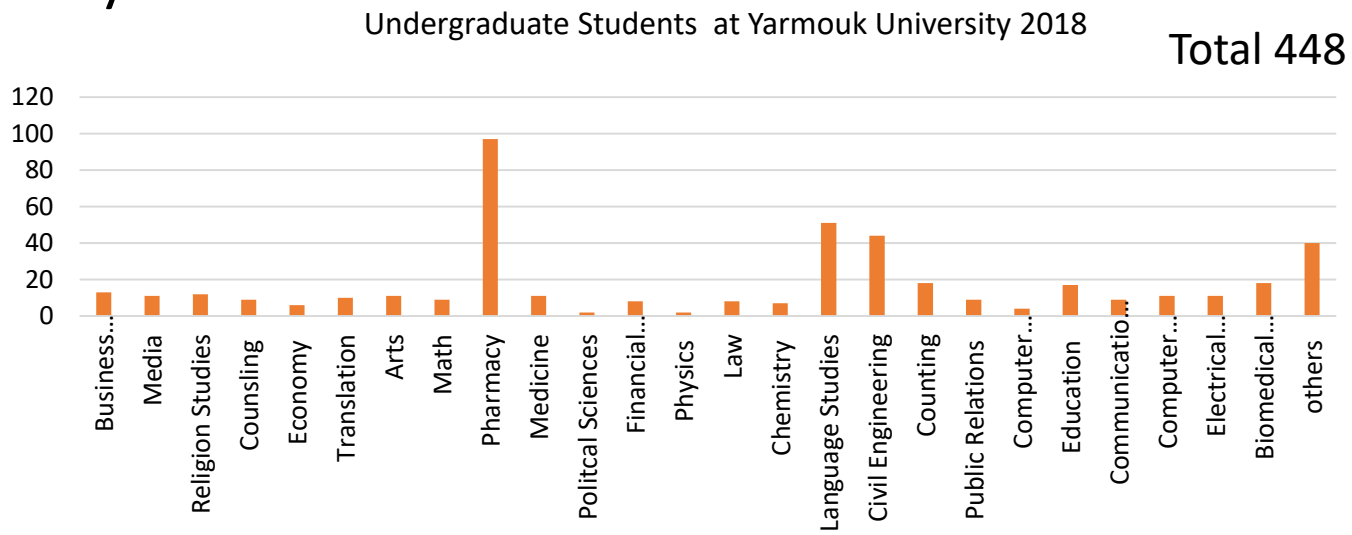
SYMPRO Project: Objectives and Activities

- Aims at empowering Syrian and Jordanian undergraduate with skills needed to get a MicroMasters degree
- Two demanding fields: Data Science(analytics) and Cyber Security



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Empowerment Program for Syrians Undergraduate to Join Micro Masters

Needs Analysis and Surveying

- November 2017- End of January 2018

Empowerment Program in Data Science and Cyber Security(Blended Learning)

- February- June 2018

Empowerment Program in real micro masters programs (Data Science and Cyber Security)

- June-December 2018

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Trainee Selection

Major	Number
Computer Science	4 (3 Jordanian+ 1 Syrian)
Computer Engineering	4 (Syrian)
Information Systems	4 (Jordanian)

Gender	Number
Male	5 Syrians+ 1 Jordanian
Female	6 Jordanians

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Phase 1

Training Module	Term
Fundamentals in Cyber Security	Spring 2018/ Yarmouk University
Introduction to Data Science	Spring 2018/ Yarmouk Universty
A micro-Master course in Cyber Security	Fall 2018/ EDX platform
A micro-Master Course in Data Analysis	Fall 2018/ EDX platform

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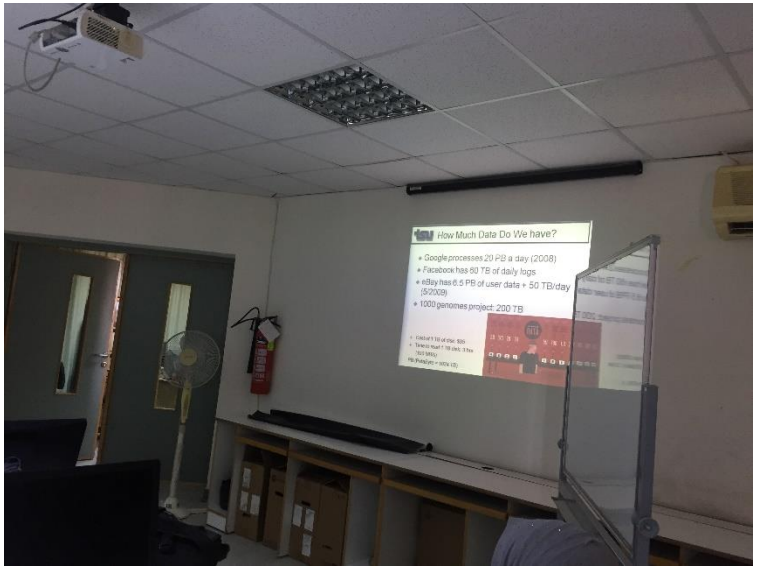
Weekly meetings with students



Project Team

1. Dr. Ahmed AlEroud (PI and Instructor of cyber Security module)
2. Dr. Khaled Nahar (Co-PI and Data science Instructor)
3. Mr. Ahmed Zyout (Administrator/E-learning System)
4. Mr. Abduallah Alzoubi (Lab Technician)

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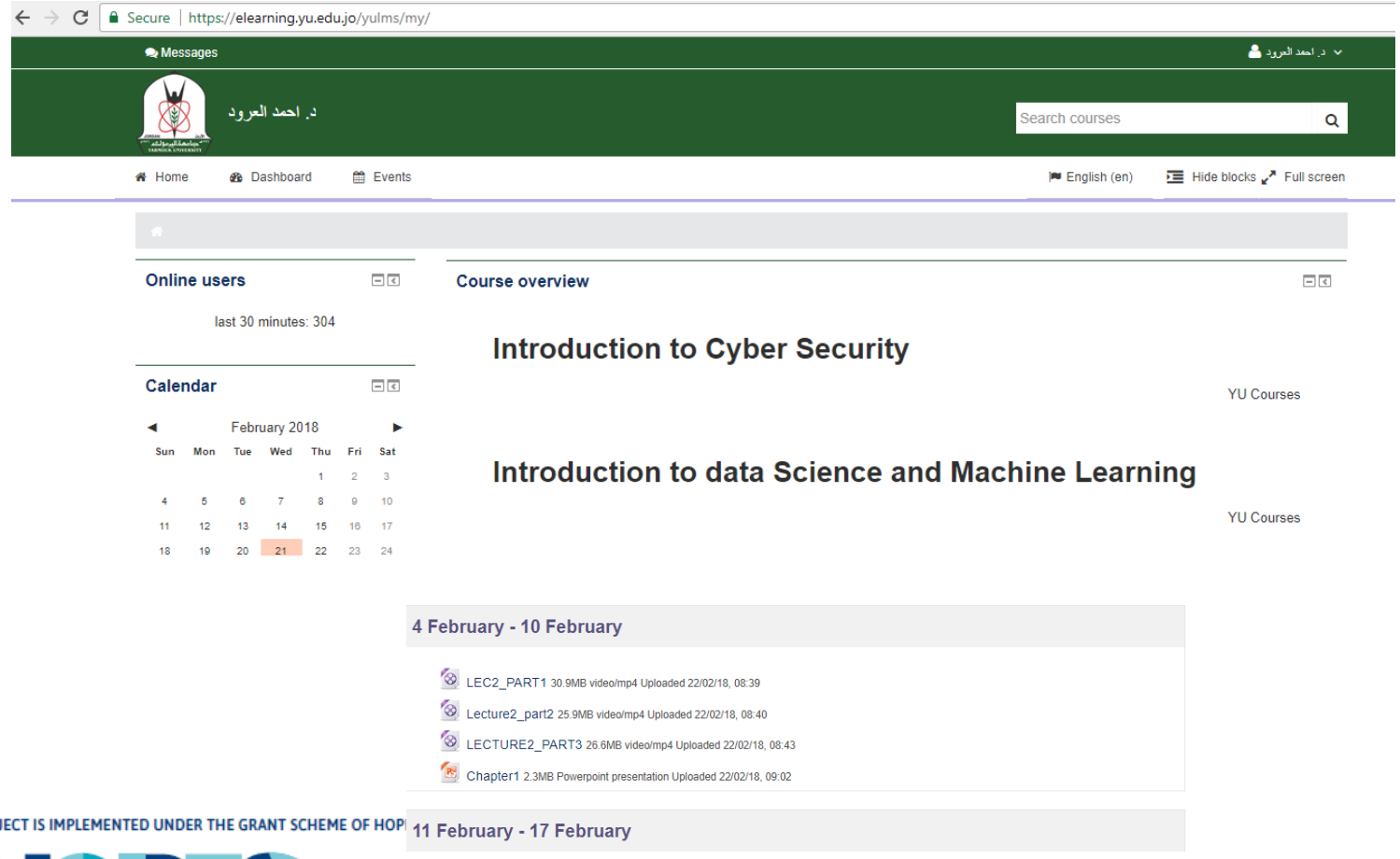
Material Available on the E-Learning System



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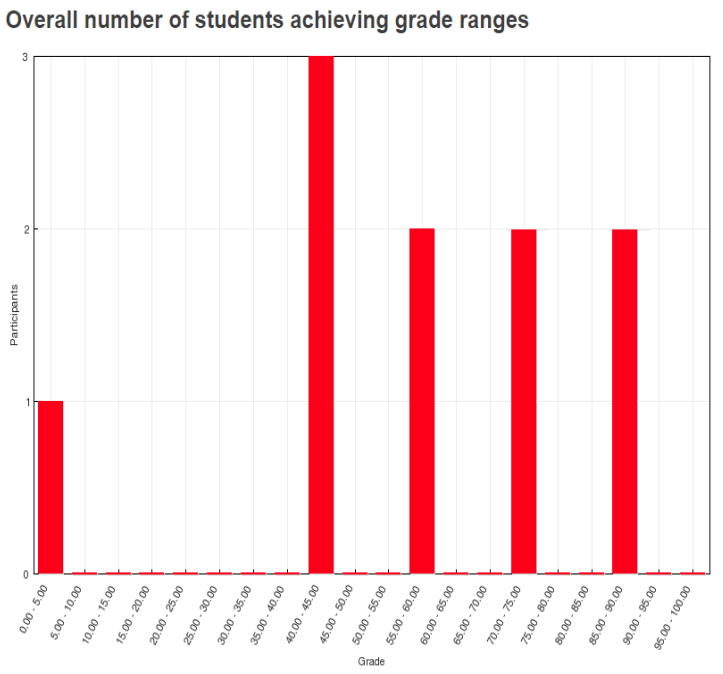
Student's Evaluation



ID number	State	Started on	Grade/100.00	Q. 1 /50.00	Q. 2 /50.00
2015810007	Finished	5 March 2018 9:00 PM	100	50	50
2013880032	Finished	6 March 2018 1:41 AM	100	50	50
2013901026	Finished	6 March 2018 8:19 AM	100	50	50
2013902046	Finished	6 March 2018 10:54 AM	100	50	50
2013902072	Finished	6 March 2018 10:54 AM	100	50	50
2013880010	Finished	6 March 2018 11:06 AM	100	50	50
2013902035	Finished	6 March 2018 12:05 PM	100	50	50
2013880037	Finished	6 March 2018 12:57 PM	100	50	50
2017803010	Finished	6 March 2018 3:27 PM	100	50	50
			100	50	50

Samples of Student Answers

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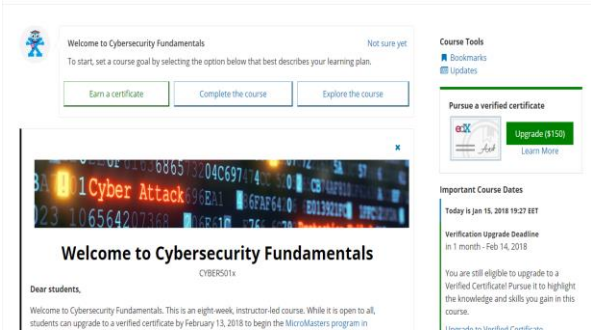
Universities Offer MicroMasters

Australian National University (ANUx)
Columbia University (ColumbiaX)
Curtin University (CurtinX)
Galileo University (GalileoX)
The Hong Kong Polytechnic University (HKPolyUx)
Indian Institute of Management Bangalore (IIMBx)
Massachusetts Institute of Technology (MITx)
Polytechnic University of Valencia (UPValenciaX)
Rochester Institute of Technology (RITx)
Université catholique de Louvain (LouvainX)
University of Michigan (MichiganX)
Wageningen University (WageningenX)



Recognition in Industry

- Adobe Systems
- Bloomberg L.P.
- Booz Allen Hamilton
- BYTE
- Carnegie Foundation
- Fidelity Investments
- Foley Hoag LLP
- Ford
- GeneDx
- Hotel Icon
- IBM
- Marketforce
- Mitchell International
- PayChex
- PwC
- Rethink Robotics
- Volvo
- Walmart

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Phase 2: Students Registration in MicroMasters Credits

- Two courses
- A Micro Masters level course on Big Data analytics and Internet of things/ Offered as part of a micromasters program at Curtin University (CurtinX)/ Australia
- A microMasters level course on Cyber Security offered as part of a microMasters program in Cyber Security/ Rochester Institute of Technology (RITx)/USA

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Course on Big Data and IOT (Data Analytics)

	Jordanian	Syrian
Males	0	3
Females	4	0

Major	Number of Students
Computer Information Systems	4
Computer Engineering	2
Computer Science	1

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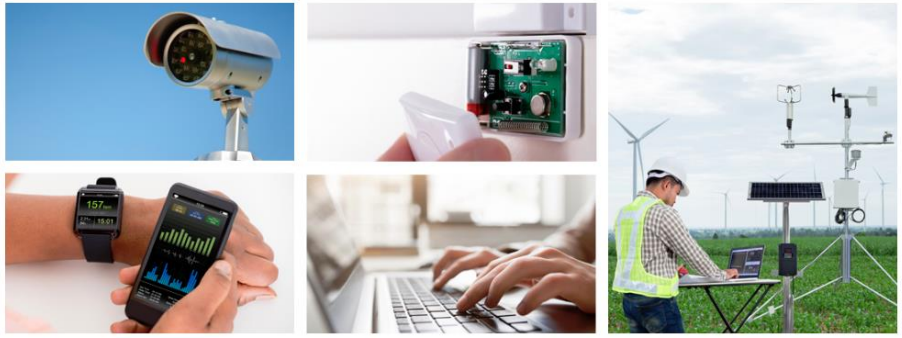
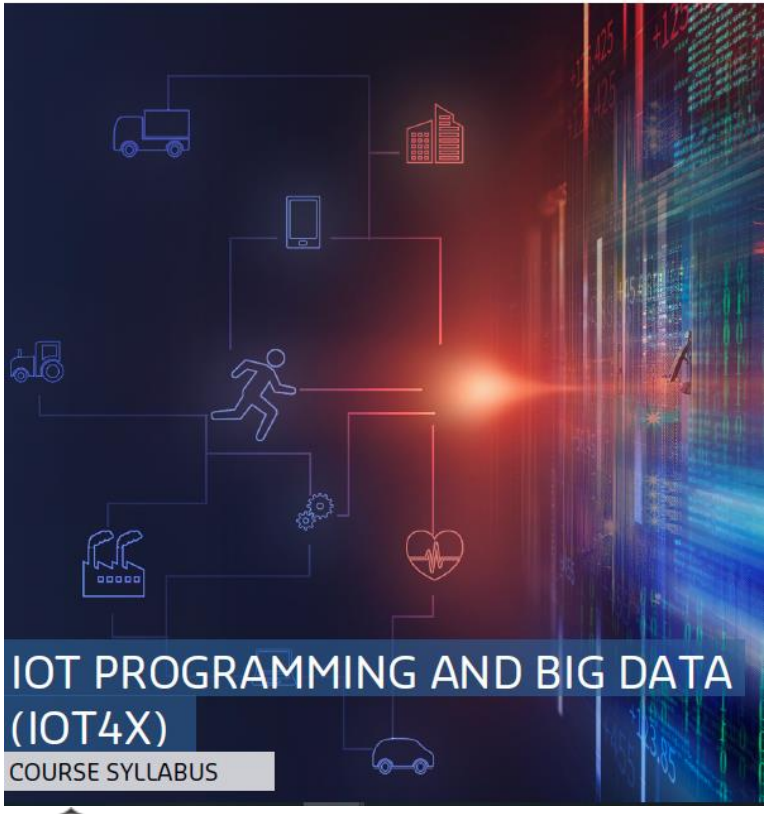
Course Information



edX MicroMasters

Curtin University



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MicroMasters in IOT Curtin University

MicroMasters in the Internet of Things (IoT)

Welcome

Welcome to **IOT4x - IoT Programming and Big Data**, the fourth course in our MicroMasters in the Internet of Things program.

Complete, pass and earn a Verified Certificate in all six courses to receive your MicroMasters Credential.

- IOT1x - Introduction to the Internet of Things (IoT)
- IOT2x - IoT Sensors and Devices
- IOT3x - IoT Networks and Protocols
- **IOT4x - IoT Programming and Big Data - *this course!***
- IOT5x - Cybersecurity and Privacy in the IoT
- IOT6x - IoT Capstone Project

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Course Lecturers

Your Instructors:

Dr Johannes U. Herrmann

Hannes is a Senior Lecturer who teaches computing at Curtin University. He has worked at both the Sawarak and Bentley campuses of Curtin, as well as having worked for UWA, Murdoch and ECU in the past. He received his B.Sci (Hons) and MSc (Research) from UWA and his Ph.D. from Curtin. He is involved in several ongoing projects relating to the teaching of computing-related information using technology.

Dr Valerie Maxville

Valerie Maxville is an experienced educator who is passionate about technology and its potential. She enjoys making technology accessible - taking on the challenge of communicating complex concepts to diverse audiences.

Valerie lectures core units in Data Science and Computer Science at Curtin University. From 2007 to 2016 Valerie coordinated and delivered training, internships, outreach and user engagement at the Pawsey Supercomputing Centre (iVEC) to increase awareness and uptake of computational science. Valerie holds a PhD in Computer Science (Software Engineering) and an Honours degree in Computer Science. As an industry volunteer, Valerie actively promotes careers in computing and local industry development. She is a Fellow of the Australian Computer Society (ACS) and a Senior Member of the Institute for Electrical and Electronic Engineers (IEEE).

Dr Aloke Phatak

Aloke is an engineer-turned applied statistician who obtained his BASc, MASc, and PhD from the University of Waterloo in Canada. He spent more than 20 years at the CSIRO, where he carried out research in applied statistics; worked with a wide range of industries and in diverse areas such as industrial statistics, biomarker discovery, and climate extremes; and developed short courses for practicing engineers and scientists.

At Curtin he co-ordinates the Data Science Major, carries out consulting with industry, and is always on the lookout for new ways of teachings statistics and data science.

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Course Syllabus

Assessment Type	% of Final Grade	Due Date
Module quizzes (x 3)	3 x 10% = 30%	12 November 2018 *(23.30 UTC)*
Final quiz	20%	12 November 2018 *(23.30 UTC)*
Practical task 1 (Module 1)	15%	12 November 2018 *(23.30 UTC)*
Practical task 2 (Module 2)	15%	12 November 2018 *(23.30 UTC)*
Practical task 3 (Module 4)	20%	12 November 2018 *(23.30 UTC)*

Course Schedule:

Module	Topic	Assessment
1	Introduction to Big Data from the IoT	Module 1 quiz (10%) Practical task 1 (15%)
2	Data at the Edge	Module 2 quiz (10%) Practical task 2 (15%)
3	Data in the Cloud	Module 3 quiz (10%)
4	Obtaining, Visualising and Analysing Data	Practical task 3 (20%)
5	Summary and assessment	Final quiz (20%)

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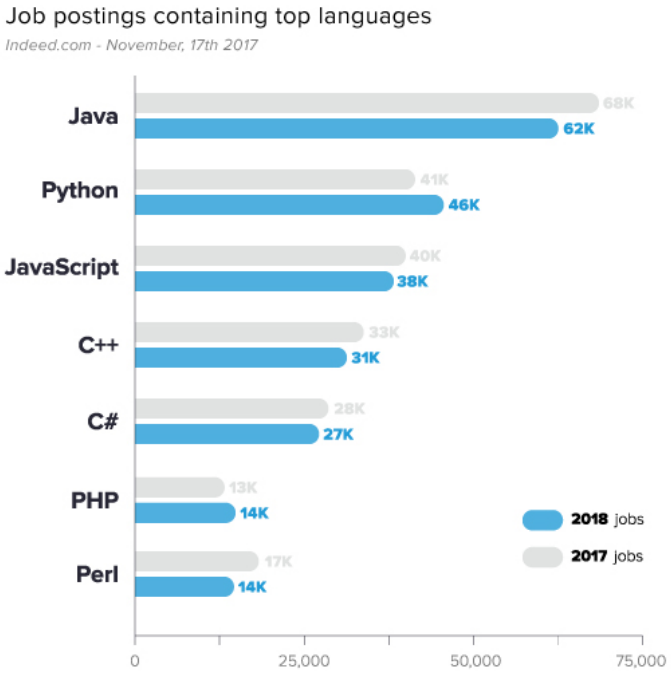
Reasons For Selecting the Course

- Students will learn how to program in Python(Top in Job Posting)



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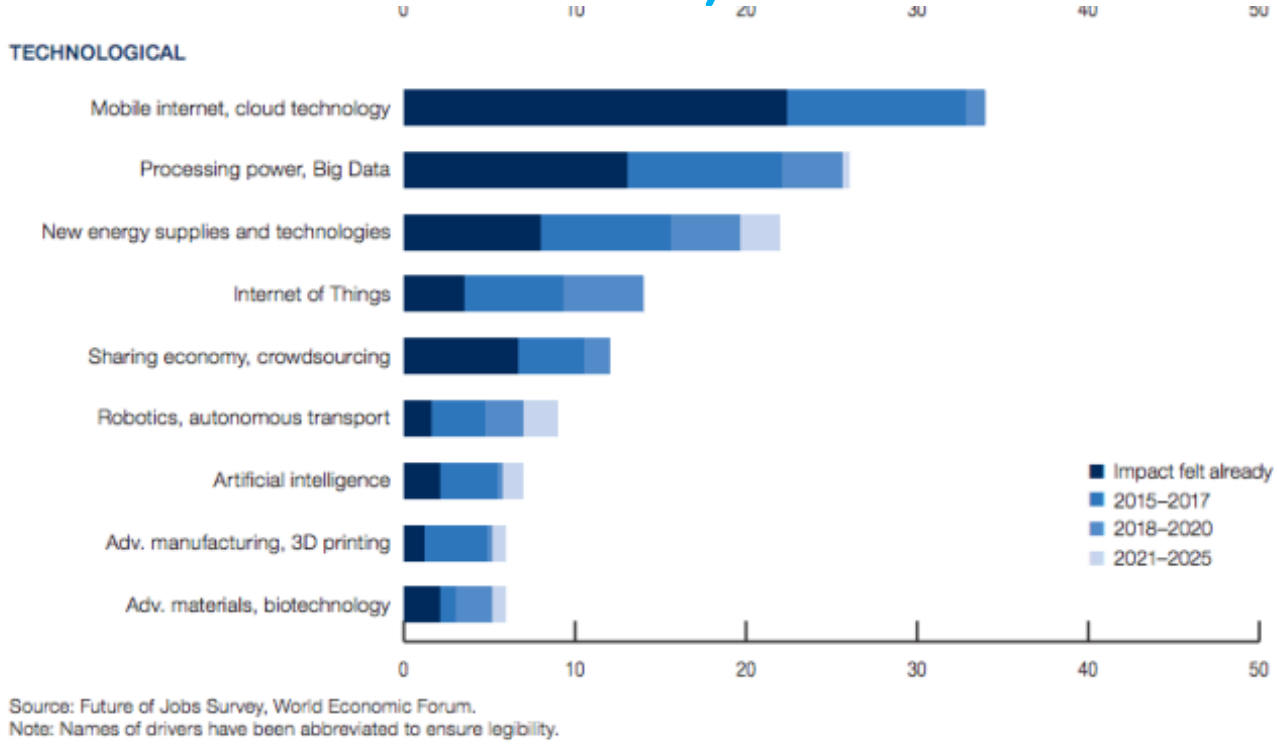
Reasons For Selecting the Course(Big Data and IOT)



Source: Future of Jobs Survey, World Economic Forum.
Note: Names of drivers have been abbreviated to ensure legibility.

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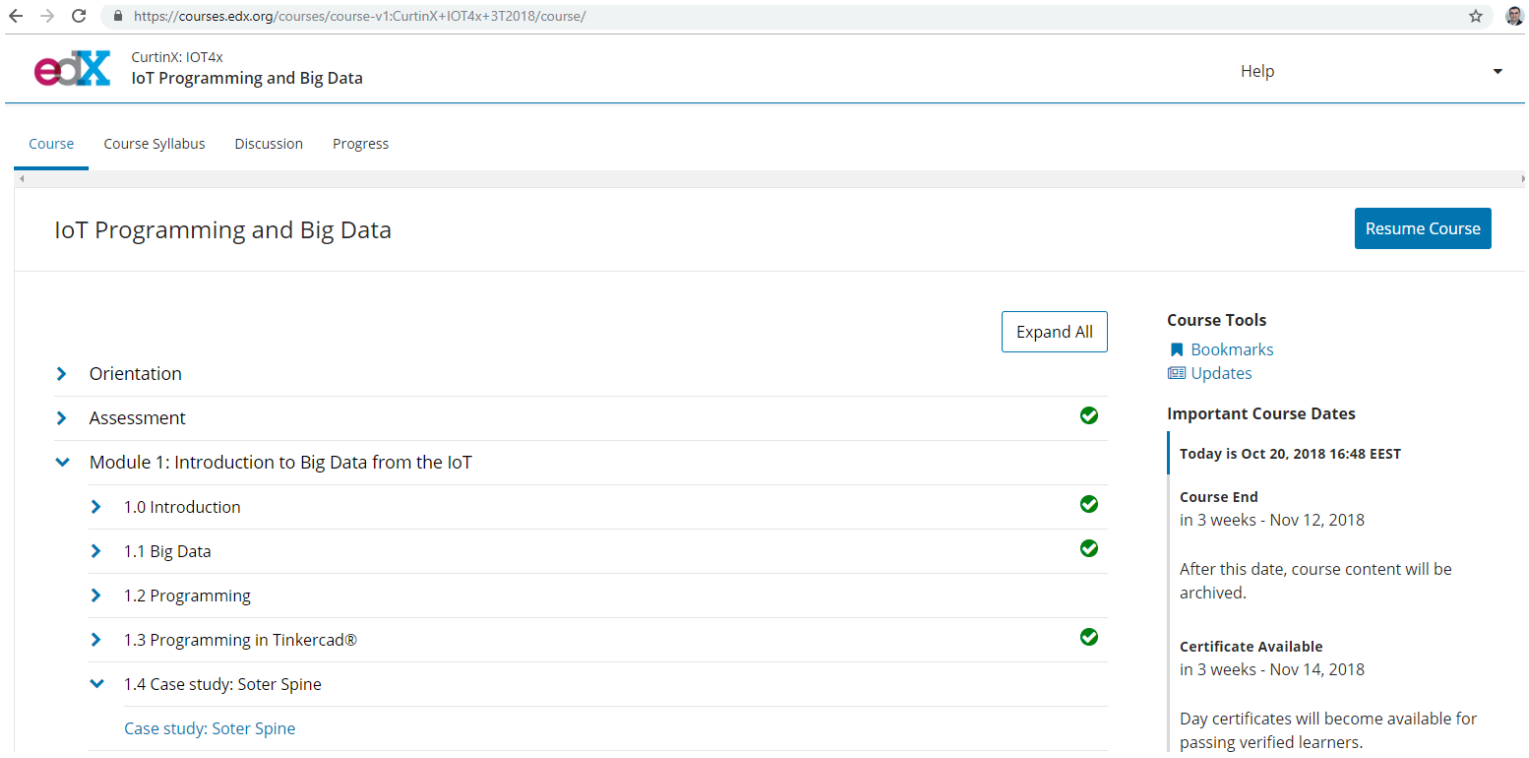
Course Interface on EDX



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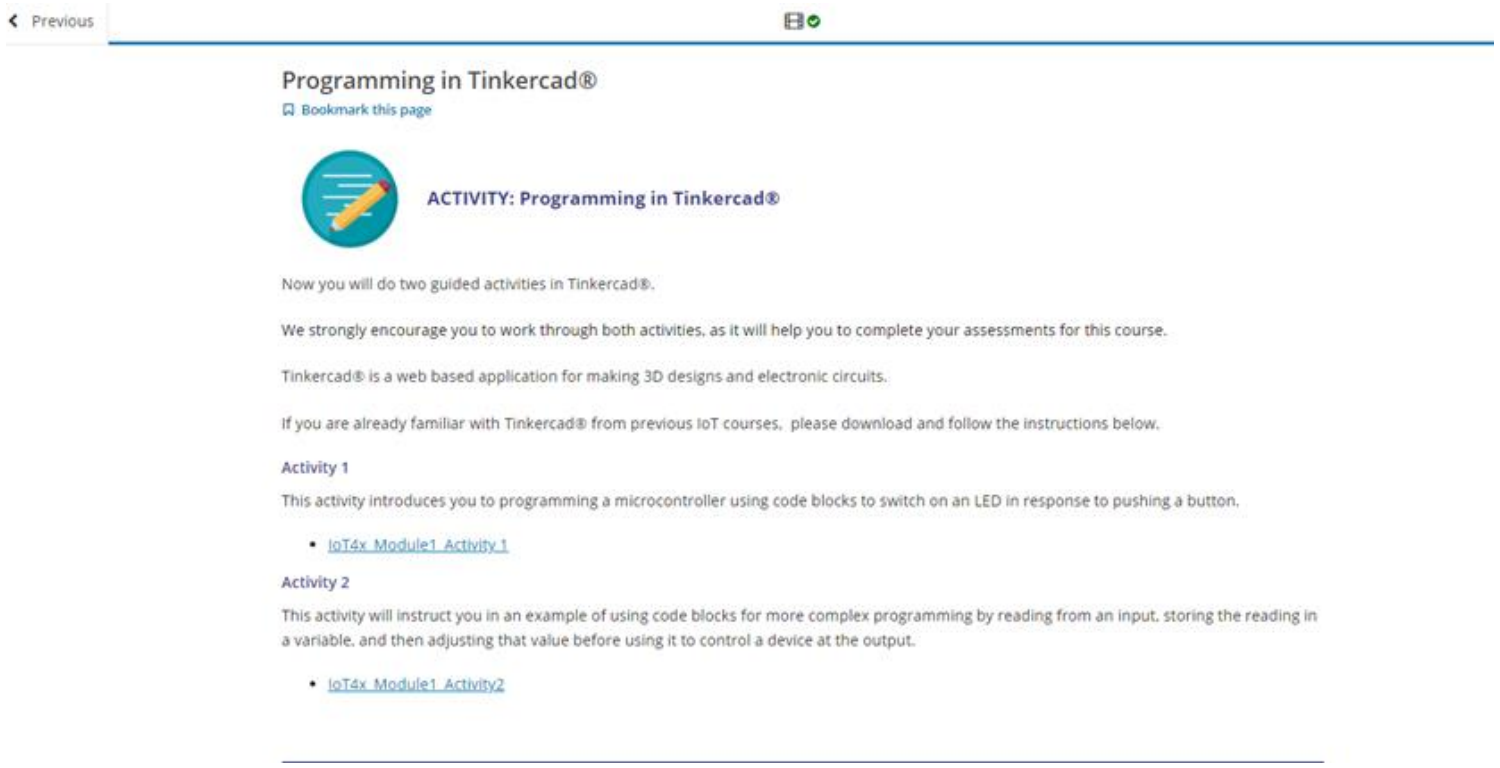
Sample of Practical tasks



Previous

Programming in Tinkercad®

Bookmark this page

ACTIVITY: Programming in Tinkercad®

Now you will do two guided activities in Tinkercad®.

We strongly encourage you to work through both activities, as it will help you to complete your assessments for this course.

Tinkercad® is a web based application for making 3D designs and electronic circuits.

If you are already familiar with Tinkercad® from previous IoT courses, please download and follow the instructions below.

Activity 1

This activity introduces you to programming a microcontroller using code blocks to switch on an LED in response to pushing a button.

- IoT4x_Module1_Activity 1

Activity 2

This activity will instruct you in an example of using code blocks for more complex programming by reading from an input, storing the reading in a variable, and then adjusting that value before using it to control a device at the output.

- IoT4x_Module1_Activity2

- Activity 1

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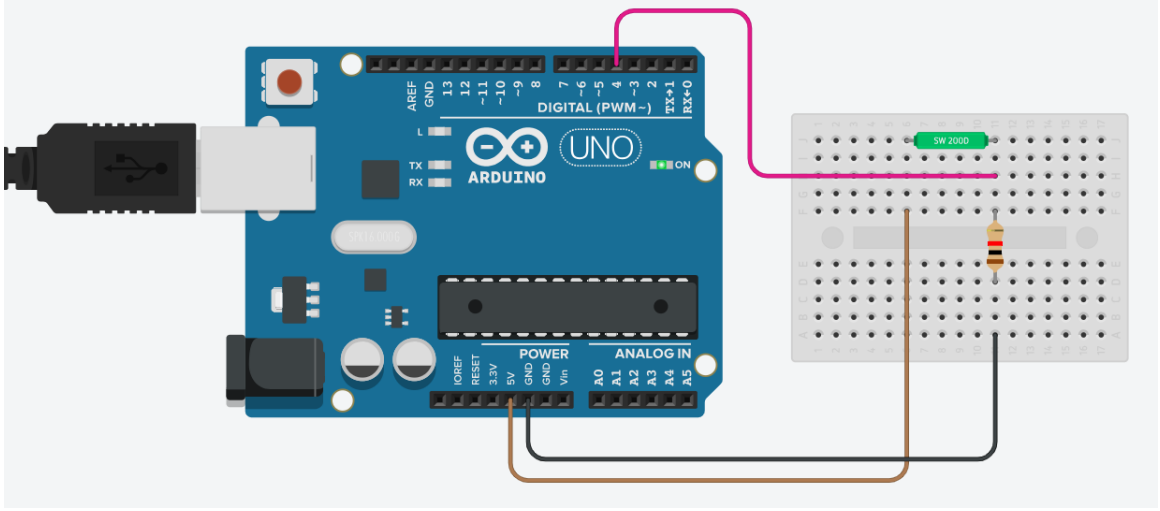
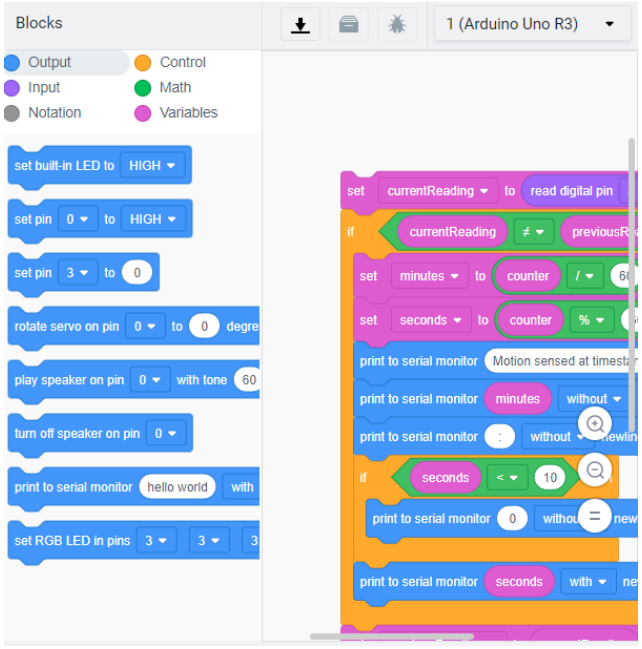
Simulating Programming tasks





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Quiz Questions

Rank	Database Management System	Database Model
1	Oracle	Relational DBMS
2	MySQL	Relational DBMS
3	Microsoft SQL Server	Relational DBMS
4	PostgreSQL	Relational DBMS
5	MongoDB	Document store
6	DB2	Relational DBMS
7	Redis	Key-value store
8	Elasticsearch	Search Engine
9	Microsoft Access	Relational DBMS
10	Cassandra	Wide column store

Question 1

2.0/2.0 points (graded)

In the table above, how many of the top 10 most popular databases belong to the No-SQL family of databases?

- 0
- 1

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Question 5 - Information

The whitepaper "Intel® IoT Gateways: Pulling Data from a Temperature Sensor Using a Python Script" is a getting started guide for working with Gateways and Python.

The code includes statements to delay the processing to reduce data traffic and storage. Study the following code and answer the question that follows.

```
1    #! /usr/bin/python
2    import sys
3    import datetime
4    from time import time, sleep
5    from Phidgets . Devices . InterfaceKit import *
6    from Phidgets . Devices . TemperatureSensor import *
7    TEMP_SENSOR_PORT = 6
8    # Define an error catching function so we can call it on "try...except" blocks
9    def LocalErrorCatcher( event ):
10     print ( "Phidget Exception: " + str(e.code) + " - " + str(e.details) + ",
11    Exiting..." )
12    exit(1)
13    # Get the temperature sensor reading from port #TEMP_SENSOR_PORT of the Sensor Kit
14    def GetTemp( device , outfile , TEMP_SENSOR_PORT ):
15     current_time = datetime . datetime .now()
16     # Get the board temperature in Celsius by reading sensor input and applying
17    conversion formula
18     ambientTemp = ( device .getSensorValue( TEMP_SENSOR_PORT ) * .2222) - 61.111
19     # Write the data to the text file
20     time_and_temp = (str(current_time) + ", " + str(ambientTemp) + "\n" )
21     print ( "%s" % time_and_temp)
22     outfile .write(time_and_temp)
23     sys .stdout.flush()
24    # Clear and open the data file for writing
25    outfile = open( "phidgets_temperature_data.txt" , "w" )
26    # Write a header to the text file first thing
27    outfile.write( "Time Sensor Temperature (C)\n" )
```

Question 5

2.0/2.0 points (graded)

What change would be made to the code to sample the data every minute instead of every second?

- Line 7, change TEMP_SENSOR_PORT = 6 **to** TEMP_SENSOR_PORT = 60
- Line 39, change device.waitForAttach(10000) **to** device.waitForAttach(600000)
- Line 40, change device.setDataRate(TEMP_SENSOR_PORT, 4) **to** device.setDataRate(TEMP_SENSOR_PORT, 60)
- Line 49, change sleep(1) **to** sleep(60) ✔

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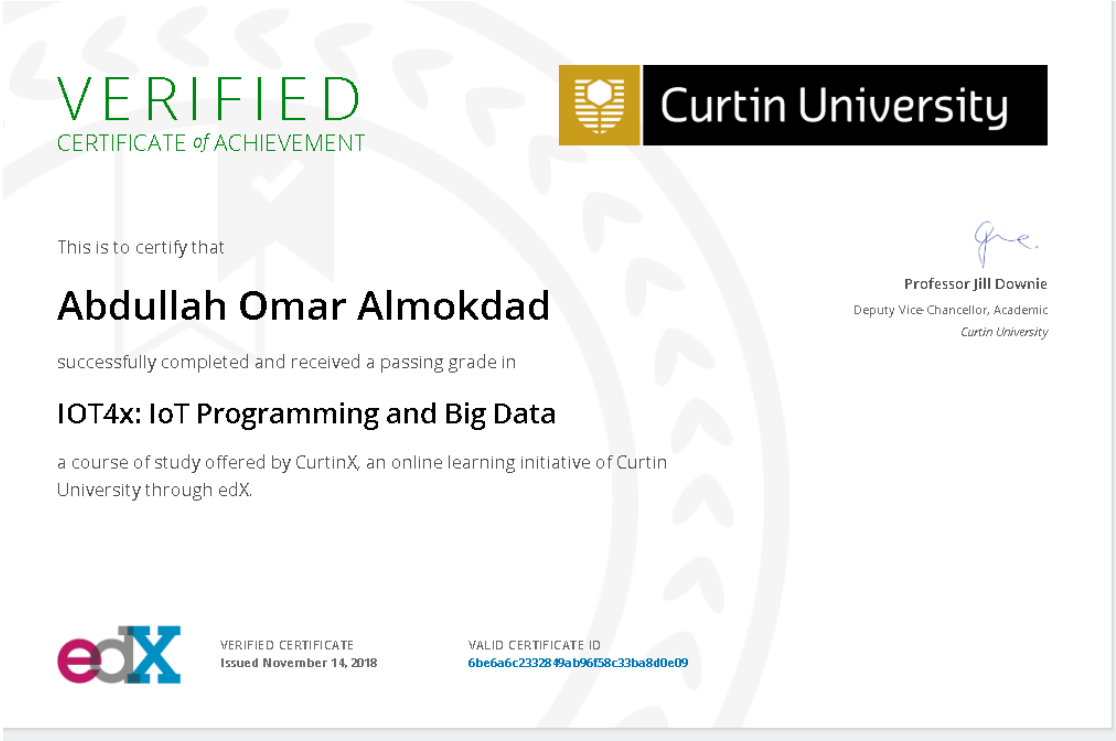
Student Certificates



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Curtin University

This is to certify that

Abdullah Omar Almokdad

successfully completed and received a passing grade in

IOT4x: IoT Programming and Big Data

a course of study offered by CurtinX, an online learning initiative of Curtin University through edX.

Professor Jill Downie
Deputy Vice-Chancellor, Academic
Curtin University

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Course 2 on Cyber Security

- A MicroMasters Program on Cyber Security
- Offered by RIT (Rochester Institute of Technology)

Courses

Cybersecurity Fundamentals — Starts on January 8, 2019

Learn cybersecurity fundamentals, including how to detect threats, protect systems and networks, and anticipate potential cyber attacks.

View the Cybersecurity Fundamentals course

Computer Forensics — Starts on October 9, 2018

Learn the process, techniques and tools for performing a digital forensics investigation to obtain data related to computer crimes.

View the Computer Forensics course

Cybersecurity Risk Management — Starts on October 9, 2018 (more dates)

Learn key principles of risk analysis, risk assessment and risk mitigation for information security using both qualitative and quantitative methodologies.

View the Cybersecurity Risk Management course

Network Security — Starts on October 9, 2018

Learn the process of network security, including intrusion detection, evidence collection, network auditing, and contingency planning against attacks.

View the Network Security course

Cybersecurity Capstone — Starts on January 8, 2019 (more dates)

Demonstrate the knowledge and skills acquired in the Cybersecurity MicroMasters Program.

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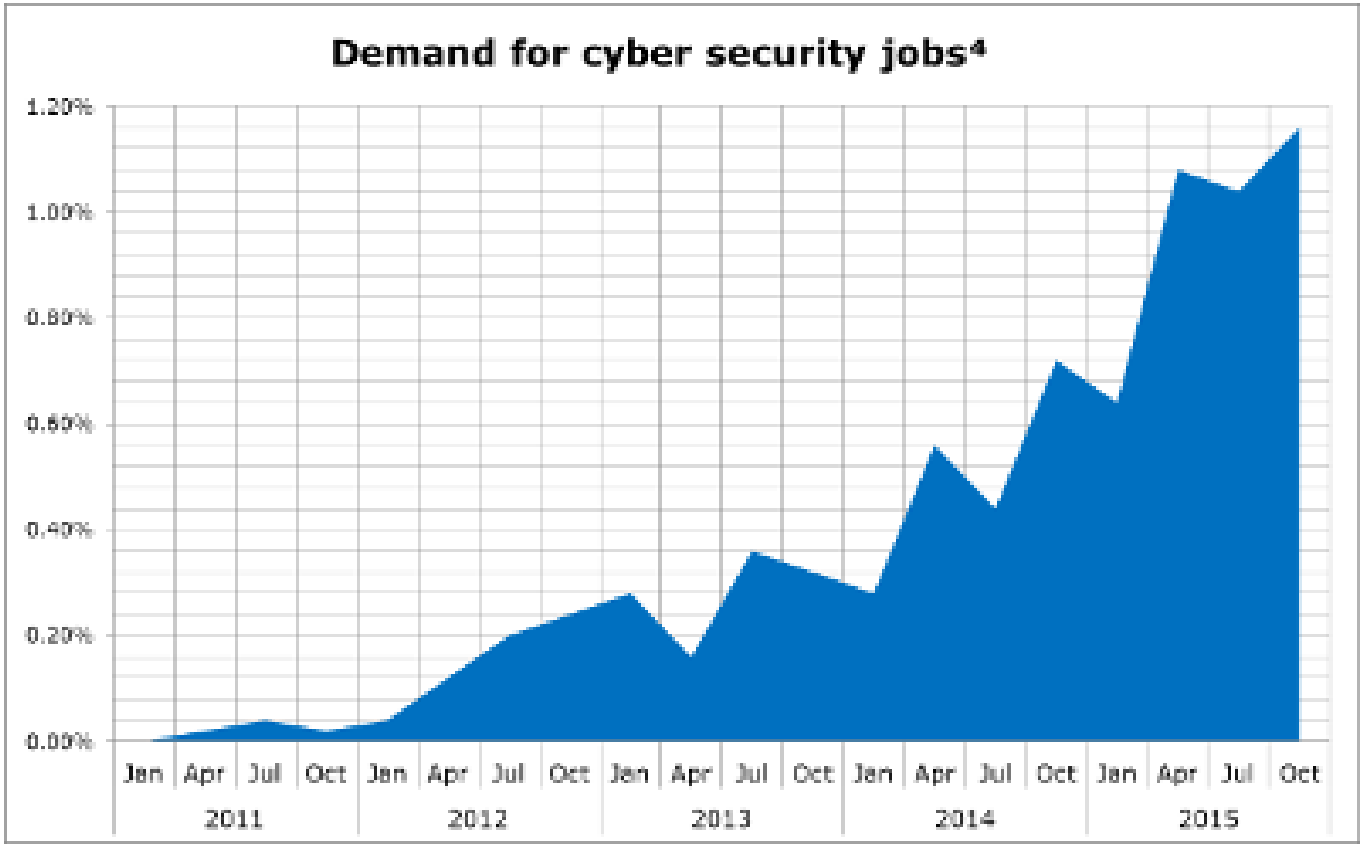
Demand in Cyber Security Jobs



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Network Security Course

	Syrian
Males	5
Females	0

Major	Number
Computer Science	1
Computer Engineering	4

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Cyber Security MicroMasters Program

View Courses | Meet the Instructors | The MicroMasters Program

MicroMasters® A series of credit-eligible courses recognized by industry.

Gain the essential knowledge and expertise in network security and forensics needed for cybersecurity in enterprise environments.

In this Cybersecurity MicroMasters Program, you will learn:

- Fundamentals of networks;
- Systems administration;
- How to protect computer networks and other systems by mitigating vulnerabilities and monitoring intrusions;
- How to perform digital forensic analysis of cybercrime by gathering information on the nature and extent of the attack for presentation in a court of law, as well as assessing the extent of the damage to an organization;
- Techniques of risk analysis;
- Risk assessment and vulnerability assessment.

The MicroMasters Program capstone experience for verified learners entails practical demonstration of these skills.

Average Length:	8 weeks per course
Effort:	10-12 hours per week, per course
Number Of Courses:	5 Courses in Program
Subject:	Computer Science
Institution:	Rochester Institute of Technology
Institution Offering Credit:	Rochester Institute of Technology
Language:	English
Video Transcripts:	English
Price (USD):	~~$1200 USD~~ **$1080 USD** for the entire program. **You save $120 USD.**

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Course Syllabus

- Unit 1: Packet Sniffing
- Unit 2: Password Cracking
- Unit 3: Port Scanning
- Unit 4: Exploits and Exploiting
- Unit 5: Access Control Lists
- Unit 6: Snort
- Unit 7: DHCP, DNS, and Switch Attacks and Mitigations
- Unit 8: Man in The Middle Attacks and Mitigations

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Course Evaluation

- Weekly Readings
- Analyze attack/defend scenarios and determine the effectiveness of particular defense deployments against attacks.
- Weekly quizzes

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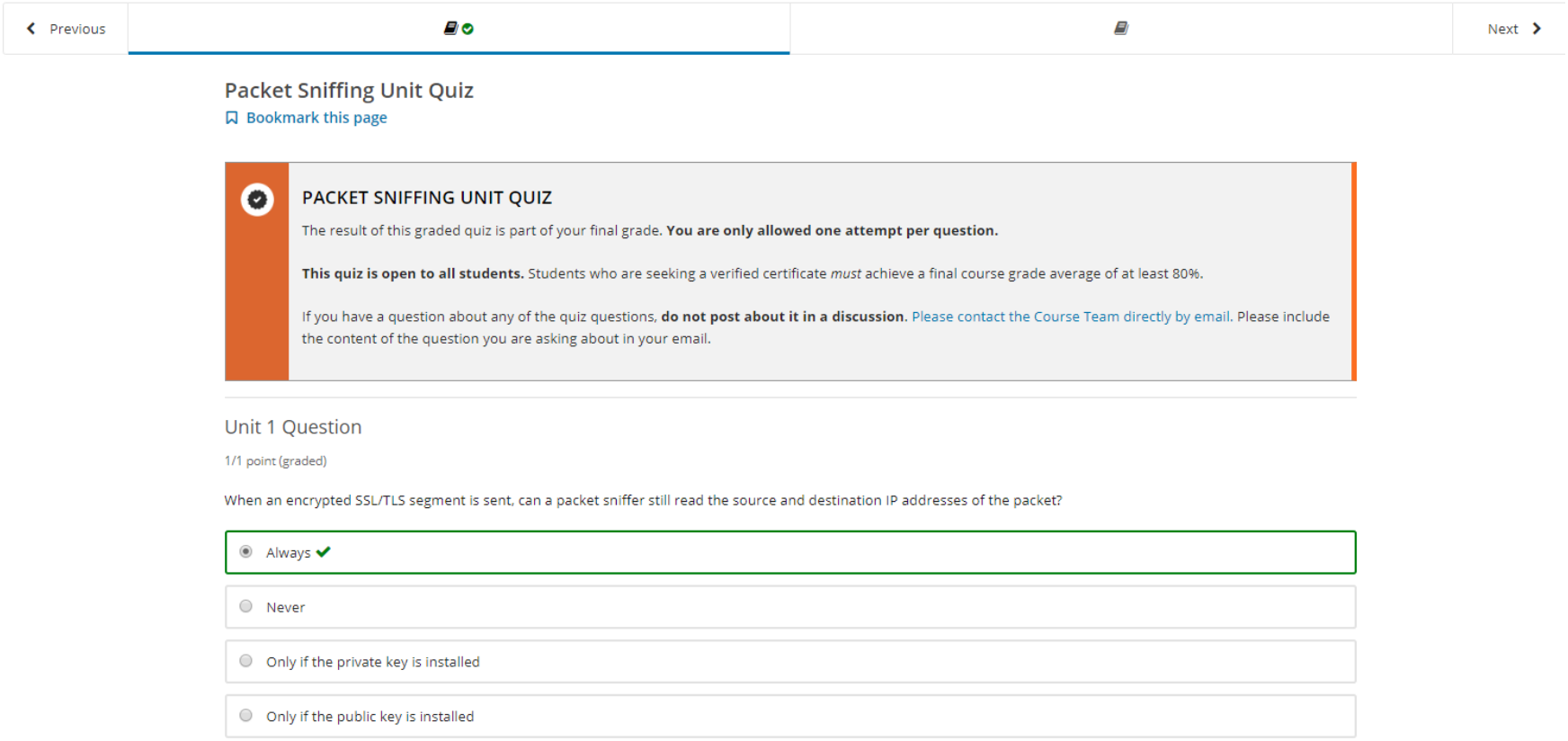
Weekly Quizzes



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Weekly Activities

Activity: Viewing Network Data with Wireshark

Bookmark this page

ACTIVITY: VIEWING NETWORK DATA WITH WIRESHARK

This activity is ungraded.

Remember: Be sure to watch these Demo videos from this unit before trying this activity. Watching me do it first will help you understand each of the steps.

- Welcome to Wireshark
- Local Communication through Wireshark
- Remote Communication through Wireshark

System: You can complete this activity on any system. You should have at least 6GB of RAM.

Time: This activity should take you 30 to 60 minutes to complete.

Downloads

- Download and install
- Download and install
- Download Kali Linux

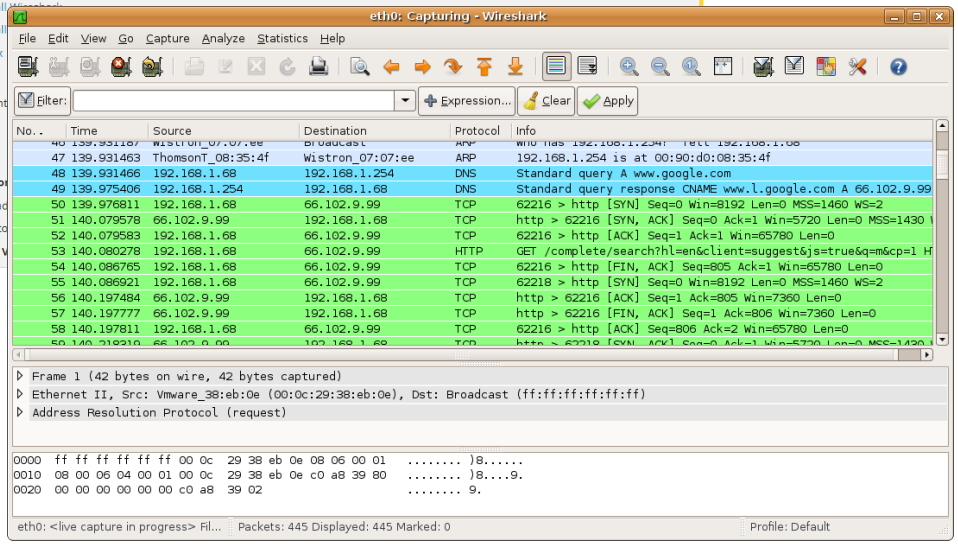
Goal

To learn how to find and int

Instructions

Set up your virtual machine

1. Launch **VMware Wo**
2. Enter a valid email ac
3. Click the **Finish** butto
4. Click **Create a New V**



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Mohammad Saed Al REFAE

successfully completed and received a passing grade in

CYBER504x: Network Security

a course of study offered by RITx, an online learning initiative of Rochester Institute of Technology through edX.

David C. Munson Jr.
President
Rochester Institute of Technology

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EDX Piloting(trial) Phase

- 5 Students are registered in a course on Cyber Security to get familiar with the environment
- Communication with Students

Ahmed Aleroud <ahmed.aleroud@yu.edu.jo> Sat, Jun 9, 2018 at 1:24 PM
To: Islam ALomari <islamalomari56@gmail.com>, sawjamil@yahoo.com, momani.hebah2196@gmail.com, hlaalnaamneh@gmail.com, 2015802018@ses.yu.edu.jo, Mohammad Tarrab <aleppo80@gmail.com>, mousaali2277@gmail.com, mousa ali <mousa.91.m@gmail.com>, mohamed khaled <mohamed9797khaled@gmail.com>

السلام عليكم

ارجو العلم بأن محتوى الوحده الأولى متوفر على موقع edx كما ارجو منكم الدخول الى الموقع ومن ثم الى المساق

https://courses.edx.org/courses/course-v1:RITx+CYBER501x+2T2018/course/

وعمل التالي

1. التعريف بانفسكم باللغه الإنجليزيه
My name is ... and I am interested in Cyber Security
التعريف اعلاه عام وتستطيعون التعريف بانفسكم بطريقه اخرى ..حتى اللحظه فقط 3 طلاب قاموا بالتعريف بأنفسهم داخل المساق
2. هناك مجموعه من الفيديوهات لشرح الوحده الأولى "مقدمه الى الامن السيبراني " .وتحتوي الفيديوهات الكثير من الامثله الواقعيه لعمليات اختراق حدثت على مستوى العالم
3. النص الموجود مع كل فيديو مرفق في هذا الإيميل بملف اسمه "محتوى الوحده الاولى، بالتالي لكم خيار الاطلاع على الفيديو او الاطلاع على النص في ملف "محتوى الوحده الاولى
4. بعد نهاية فيديو الوحده الأولى هناك مجموعه من القراءات الذاتيه اغلبها مواقع الكترونيه تتحدث عن موضوع الاختراق. مثال يشرح المدرس كيفية التجسس على كاميرات لاتحتوي نظام حمايه من الاختراق ..ويعطي مثال حي على احد هذه المواقع كالتالي

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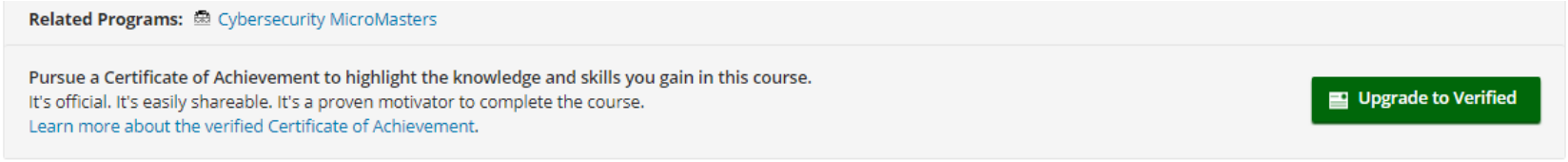
EDX Piloting Phase

- Verified track (150 USD)



- Paid for two students
- One student received the certificate

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Certificate (MicroMasters Cyber in Security)

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CERTIFICATE of ACHIEVEMENT

R·I·T

This is to certify that

Islam Alomari

successfully completed and received a passing grade in

CYBER501x: Cybersecurity Fundamentals

a course of study offered by RITx, an online learning initiative of Rochester Institute of Technology through edX.

David C. Munson Jr.
President
Rochester Institute of Technology

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الصندوق الاستئماني الأوروبي 'مدد'

Project Dissemination Activities

Done in Collaboration with the Refugee Center at Yarmouk Universities

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CERTIFICATE of ACHIEVEMENT
This certificate is to acknowledge that
Murad Mohammad Alribdawi
Has successfully completed
THE ACADEMIC ADVANCED TRAINING ON JOINING EDX MICROMASTERS PROGRAMS , WHICH WAS HELD AT YARMOUK UNIVERSITY IN COLLABORATION WITH HOPES PROJECT BETWEEN 1/2/2018 TO 15/12/2018. THE TRAINING WAS SUPPORTED BY EU REGIONAL FUND MADAD
DECEMBER, 20
2018
SIGNED, Prof. Dr. Zeidan Kafafi, President
YARMOUK UNIVERSITY

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Challenges

- Running the project with small budget (8000 Euros). 25% of them are overhead cost
- Students can only take a course once
- The cost of an entire MicroMasters Programs is 1500-2000 USD per student. Not that expensive!!
- It is given our small budget
- Time of offering courses is not always convenient for every student

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Dissemination activities

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Dissemination activities

https://www.yu.edu.jo/index.php/news-ar/708-sympro

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جامعة اليرموك | عن الجامعة | القبول | الكليات والعمادات | المكتبة | الخريجون | اخبار ونشاطات

الإعلامية والمعلوماتية"

19.01.24 الربيع والطوالبة وخضير من المؤلفين الأكثر استشهادا بمقالاتهم ضمن معايير معامل التأثير والاستشهاد العربي "ارسيف"

19.01.23 تشكيلات إدارية واسعة في اليرموك

19.01.22 مركز الحاسب باليرموك يطلق النسخة الإنجليزية من موقع الجامعة الرئيسي

19.01.22 اليرموك تُسيّر رحلة للطلبة لأداء مناسك العمرة

رعى مدير دائرة العلاقات والمشاريع الدولية في جامعة اليرموك الدكتور موفق العتوم حفل تخريج طلبة الجامعة من الطلبة الأردنيين واللاجئين السوريين المشاركين في مشروع SYMPRO, والذي نفذته الجامعة بدعم من الصندوق الائتماني الاوروبي بقيمة 8 الاف يورو.

وقدم مدير المشروع الدكتور أحمد العرود من كلية تكنولوجيا المعلومات وعلوم الحاسوب في الجامعة عرضا

THIS PF

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