

# **PNU INTERNATIONAL CONFERENCE IN COMPUTING**

## **WORKSHOPS GUIDE**

**Date: December 10-12 2019**

**Place: Riyadh, KSA**

**Tracks:**

- **Data Science**
- **Cyber Security**
- **Internet Of Things (IOT)**

## Workshops' Schedule

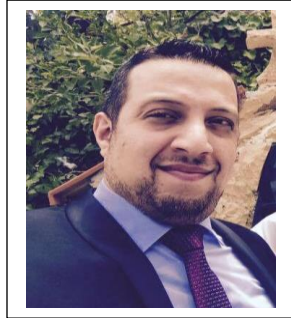
<b>Date: 10/12/2019</b>	<b>Time: 1:00 pm - 4.00 pm</b>
<b>Workshop Track</b>	IOT
<b>Workshop title</b>	IoT from Acquisition to visualization
<b>Presenter</b>	Michael Abdallah
<b>Room Number</b>	0.800
<b>Trainee's Level</b>	Expert
<b>Prerequisites Skills</b>	No
<b>Workshop Track</b>	IOT
<b>Workshop title</b>	Trusting the transaction of things: Build IoT blockchain network
<b>Presenter</b>	Nora AlNashwan
<b>Room Number</b>	0.801
<b>Trainee's Level</b>	Beginner
<b>Prerequisites Skills</b>	No
<b>Date: 11/12/2019</b>	<b>Time: 1:00 pm - 4.00 pm</b>
<b>Workshop Track</b>	Data Science
<b>Workshop title</b>	Big data simulation using Some HPC Software
<b>Presenter</b>	Norma Alias
<b>Room Number</b>	0.800
<b>Trainee's Level</b>	Degree
<b>Prerequisites Skills</b>	Computational software
<b>Workshop Track</b>	Cyber Security
<b>Workshop title</b>	Attacks and Cisco Security Defense Solutions
<b>Presenter</b>	Mohannad AlKalash
<b>Room Number</b>	0.801
<b>Trainee's Level</b>	Beginner-Medium
<b>Prerequisites Skills</b>	Good knowledge in network and entry knowledge of Security
<b>Date: 12/12/2019</b>	<b>Time: 1:00 pm - 4.00 pm</b>
<b>Workshop Track</b>	Cyber Security
<b>Workshop title</b>	Web Applications Hacking: SQL Injection & Cross-Site Scripting
<b>Presenter</b>	Mousa Al-Akhras
<b>Room Number</b>	0.800
<b>Trainee's Level</b>	Medium
<b>Prerequisites Skills</b>	Basic understanding of networking and database concepts.
<b>Workshop Track</b>	Data Science
<b>Workshop title</b>	Big Data Analytics in Weka and RapidMiner
<b>Presenter</b>	Dabiah Ahmed Alboaneen
<b>Room Number</b>	0.801
<b>Trainee's Level</b>	Beginner
<b>Prerequisites Skills</b>	No

**Note: please bring your own laptops during the workshops.**

**Workshop Track:** IOT

**Workshop Title:** IIoT from Acquisition to visualization

**Presenter:** Michael Abdallah



**Date:** Tuesday, December 10, 2019

**Time:** 1:00 pm – 4:00 pm

**Room Number:** 0.800

**Outlines:**

- Introduction to Data Acquisition System
- The chain of data from physical to digital world
- Introduction to LabVIEW
- Data Analysis, Storage & Visualization
- AR, AI, VR, PLM, Deep NLP, Deep Armor, DARWIN

**Trainee ‘Level:** Expert

**Prerequisites skills:** -

**Software Requirements:** LabVIEW, DAQmx, Vuforia (HBR AR mobile App).

### *Software information*

- LabVIEW Professional Development System 2019 SP1
- NI-DAQmx
- NI-488.2

### *Software Installation order*

- Install LabVIEW Full or Professional Development System
- Install NI-DAQmx
- Install NI-488.2

All SW can be downloaded online (<https://www.ni.com/en-lb/support/downloads/software-products/download.labview.html#329059>)

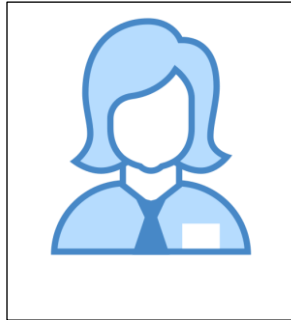
**Hardware Requirements:** Demo Hardware will be used by presenter.

**Presenter biography:** Michael Abdallah holds a master's degree in Electrical and Electronics Engineering with an emphasis in Advanced Communications Systems from the Lebanese University. He gained practical field hands-on experience in the Wireless Sensors Networks and IIoT as an Engineer at ORASCOM. He also developed research expertise as a research assistant at the American University of Beirut. In July 2012, Michael Abdallah joined National Instruments as a Technical Sales Engineer and later moved to the Applications Engineering department which provides technical support and services for the Middle East and North Africa. Throughout his career, Michael worked on basic to advanced projects with key clients from different sectors of the industry, specialized in research, education, and product development. He covered more than 30 training courses including LabVIEW, Modular instruments, Real-time systems, FPGA and Embedded platforms, data acquisition and signal conditioning, and test management. As of 2019, Michael Abdallah moved to become an academic consultant expert at SAAB Research and Development International.

**Workshop Track:** IOT

**Workshop Title:** Trusting the transaction of things: Build IoT blockchain network

**Presenter:** Nora AlNashwan



**Date:** Tuesday, December 10, 2019

**Time:** 1:00 pm – 4:00 pm

**Room Number:** 0.801

**Outlines:** In this workshop, we will introduce blockchain fundamentals, explore use cases where IoT and AI weave together via blockchain and final build a blockchain network using Hyperledger Composer.

**Trainee ‘Level:** Beginner

**Prerequisites skills:** -

**Software Requirements:** WiFi, internet browser, code editor

**Hardware Requirements:** Laptop

**Presenter biography:** Nora is a Consultant specializing in Blockchain technology at IBM. Prior to IBM, Nora worked on building innovative digital solutions for several companies, including startups and enterprises. She also worked on advocating developers to inspire and equip them with the knowledge they need.

**Workshop Track:** Data Science

**Workshop Title:** Big data simulation using Some HPC Software

**Presenter:** AP Dr.Norma Alias



**Date:** Wednesday, December 11, 2019

**Time:** 1:00 pm – 4:00 pm

**Room Number:** 0.800

**Outlines:** The first session of the workshop, the researchers will learn the concepts and skill on how to solve big data problem of a grand challenge application. Many opportunities to enhance the parallel algorithm, domain and function decomposition, mapping strategy of large scale simulation, message passing paradigm, high performance computing architecture will be described. The last session, they will go through the hands-on training on some high performance computing (HPC) software or communication protocol software such as PVM, CUDA and Matlab Distributed Computing System (MDCS). The aims of this workshop is to build the understanding on big data simulation, how to handle the huge simulation and how to use the HPC software.

**Trainee 'Level:** Degree

**Prerequisites skills:** Computational software

**Software Requirements:** PVM, CUDA and MDCS

**Hardware Requirements:** laptop

**Presenter biography:** Dr Norma Alias is currently an Associate Professor, and Research Fellow and Head of Networking and Linkages Division of Center for Sustainable Nanomaterials, Ibnu Sina Institute for Scientific and Industrial Research (IIS), Universiti Teknologi Malaysia (UTM). She was appointed as an Associate Professor and Research Fellow at King Saud University, Saudi Arabia. She is active organizing a monthly workshop such as Matlab, Maple, Mathematica, Comsol Multiphysics, CUDA, C++, PVM, MPI, OpenMP, Big data analytics, FEM, FDM and Machine Learning. . She has been invited by 20 international conferences in the year 2016-2019 as keynote, plenary and invited speaker. . She has supervised for 13 PhD students and 32 MSc with Philosophy. She is supervising ongoing 8 PhD students, 30 MSc with Philosophy students, 2 postdoctoral students and reviewing postgraduate students of local and international universities from multi-faculty. AP Dr. Norma is an active innovator, having earned 2 product patent disclosures, 4 Intellectual property declarations, and 16 medals won in product innovation and invention expo and having 2 products for commercialization. She has received the UTM Service Excellence Award in year 2016 and the Venus International Women Award as Distinguished Woman in Science for her achievements and contributions in the field of industrial computing for year 2016 and 2017.

**Workshop Track:** Cyber security

**Workshop Title:** Attacks and Cisco Security Defense Solutions

**Presenter:** Mohannad AlKalash



**Date:** Wednesday, December 11, 2019

**Time:** 1:00 pm – 4:00 pm

**Room Number:** 0.801

**Outlines:**

- The Danger: explain why networks and data are attacked.
- Attacking the Foundation: IP Vulnerabilities and Threats
- Infrastructure Countermeasure: explain how to secure Infrastructure with proper Countermeasure.

**Trainee ‘Level:** Entry to Medium

**Prerequisites skills:** Good knowledge in network and entry knowledge of Security

**LAB Description:** Configuring Layer 2 Data Plane Security Controls Through this discovery lab, you will learn how to configure layer 2 data plane security controls on the Cisco IOS Catalyst HQ Switch and to configure the Cisco Firewall and IOS Router to prevent MAC address and IP address spoofing attacks.



## **Hardware Requirements:**

### **1- PC/Laptop:**

- OS: Windows 7, 8, or 10
- Processor: Intel Core i7
- Memory: 8 gigabyte (GB) RAM (standard) or 4 GB (alternate option)
- Display Adapter: PCI, PCIe (recommended), or AGP video card
- Disk: 45 GB hard drive.
- Network: 1 Ethernet Card or 1 Wireless Ethernet Card

### **2- Internet Access**

## ***Lab – Installing the CyberOps Workstation Virtual Machine***

### Objectives

Part 1: Prepare a Personal Computer for Virtualization

Part 2: Import a Virtual Machine into VirtualBox Inventory

### Background / Scenario

Computing power and resources have increased tremendously over the last 10 years. A benefit of having multicore processors and large amounts of RAM is the ability to use virtualization. With virtualization, one or more virtual computers operate inside one physical computer. Virtual computers that run within physical computers are called virtual machines. Virtual machines are often called guests, and physical computers are often called hosts. Anyone with a modern computer and operating system can run virtual machines.

A virtual machine image file has been created for you to install on your computer. In this lab, you will download and import this image file using a desktop virtualization application, such as VirtualBox.

### Required Resources

- Computer with a minimum of 2 GB of RAM and 8 GB of free disk space

- High speed Internet access to download Oracle VirtualBox and the virtual machine image file

### **Part 1: Prepare a Host Computer for Virtualization**

In Part 1, you will download and install desktop virtualization software, and also download an image file that can be used to complete labs throughout the course. For this lab, the virtual machine is running Linux.

#### *Step 1: Download and install VirtualBox.*

VMware Player and Oracle VirtualBox are two virtualization programs that you can download and install to support the image file. In this lab, you will use VirtualBox.

- a. Navigate to  
  
<http://www.oracle.com/technetwork/server-storage/virtualbox/downloads/index.html>.
- b. Choose and download the appropriate installation file for your operating system.
- c. When you have downloaded the VirtualBox installation file, run the installer and accept the default installation settings.

#### *Step 2: Download the Virtual Machine image file.*

The image file was created in accordance with the Open Virtualization Format (OVF). OVF is an open standard for packaging and distributing virtual appliances. An OVF package has several files placed into one directory. This directory is then distributed as an OVA package. This package contains all of the OVF files necessary for the deployment of the virtual machine. The virtual machine used in this lab was exported in accordance with the OVF standard.

Click [here](#) to download the virtual machine image file.

- Cyberops VM ( Students PCs )

[https://www.dropbox.com/s/bx2m3h3c79yjhmv/cyberops\\_workstation.ova?dl=0](https://www.dropbox.com/s/bx2m3h3c79yjhmv/cyberops_workstation.ova?dl=0)

- Kali Linux ( Hacker PCs )
- [https://www.dropbox.com/s/0oslr7y8ul5nne/kali\\_linux.ova?dl=0](https://www.dropbox.com/s/0oslr7y8ul5nne/kali_linux.ova?dl=0)

## **Part 2: Import the Virtual Machine into the VirtualBox Inventory**

In Part 2, you will import the virtual machine image into VirtualBox and start the virtual machine. You will import the cyberops\_workstation and kali\_linux

### **The cyberops\_workstation example :**

*Step 1: Import the virtual machine file into VirtualBox.*

- Open **VirtualBox**. Click **File > Import Appliance...** to import the virtual machine image.
- A new window will appear. Specify the location of the .OVA file and click **OK**.
- A new window will appear presenting the settings suggested in the OVA archive. Check the "**Reinitialize the MAC address of all network cards**" box at bottom of the window. Leave all other settings as default. Click **Import**.
- When the import process is complete, you will see the new Virtual Machine added to the VirtualBox inventory in the left panel. The virtual machine is now ready to use.

*Step 2: Start the virtual machine and log in.*

- Select the **CyberOps Workstation** virtual machine.
- Click the green arrow **Start** button at the top portion of the VirtualBox application window. If you get the following dialog box, click **Change Network Settings** and set your Bridged Adapter. Click the dropdown list next the Name and choose your network adapter (will vary for each computer).

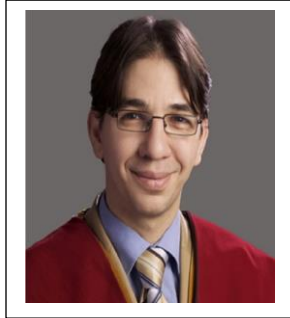
**Presenter biography:** Mohannad currently serves as Territory Manager of National, Cyber Security and Military Sectors for Cisco Systems, Inc. He is currently responsible for establishing and maintaining Cyber Security vision, strategy, and programs to secure and

enable the digital transformation journey in KSA in support of vision 2030 for the National, Cyber and Military Sectors.

**Workshop Track:** Cyber security

**Workshop Title:** Web Applications Hacking: SQL Injection & Cross-Site Scripting

**Presenter:** Dr. Mousa Al-Akhras



**Date:** Thursday, December 12, 2019

**Time:** 1:00 pm – 4:00 pm

**Room Number:** 0.800

**Outlines:**

Cyber Security is a hot research and application area that attracts interest from wide audience due to the severity of recent attacks. Several defense mechanisms were developed to counter web applications security attacks.

This workshop focuses on two common web attacks:

- SQL Injection & Cross-Site Scripting.
- SQL Injection was classified by OWASP as the top application threat. XSS was also classified in the top 10.

The topics to be covered:

- Virtual Box + very quick basics of Linux - 45 Minutes
- Metasploit Practice
- Connecting with Hackthebox

- Web application Security
- Defense Mechanisms
- Attacks on web applications
- Attacking Data Stores: SQL Injection
- Practice on SQL Injection with SQLMap
- Attacking Users: Cross-Site Scripting
- Practice on Cross-Site Scripting (XSS)

**Trainee ‘Level:**

At least undergraduate students in a computer related field. Postgraduates, academics and professionals are also fit.

**Prerequisites skills:** Basic understanding of networking and database concepts.

**Software Requirements:** Oracle VM Virtualbox, Linux Kali and Internet Connectivity

The list of the required Softwares for the workshop:

*Oracle Virtualbox*

<https://www.virtualbox.org/wiki/Downloads>

*Kali Linux*

<https://images.offensive-security.com/virtual-images/kali-linux-2019.3a-vbox-amd64.ova>

*Windows Image*

[https://drive.google.com/open?id=1BO0tirAAFH-Eq7Bf4P613xp6VyBRYGc\\_](https://drive.google.com/open?id=1BO0tirAAFH-Eq7Bf4P613xp6VyBRYGc_)

*OWASP BWA*

[https://drive.google.com/open?id=19HWY5xNmxBLaYX\\_Qtw3V9oTHkR6aOKZ](https://drive.google.com/open?id=19HWY5xNmxBLaYX_Qtw3V9oTHkR6aOKZ)

<https://sourceforge.net/projects/owaspbwa/files/latest/download>

*Note:* to save time attendees need to create a fake email address in advance to use during the practice.

**Hardware Requirements:**

Laptop/Desktop connected to the Internet with administration privilege.

**Presenter biography:**

Dr. Mousa T. AL-Akhras obtained his B.Sc. and M.Sc. degrees in computer science from the University of Jordan, Amman, Jordan in 2000 and 2003, respectively. He earned his Ph.D. degree in 2007 from De Montfort University, Leicester, UK.

In 2007 he joined the Computer Information Systems Department, the University of Jordan as an assistant professor. He was promoted to the rank of an associate professor in 2012. In August 2014, he joined Saudi Electronic University (SEU) as the coordinator of M.Sc. Cyber Security Program.

His research interests include problems in the areas of artificial intelligence and Network Security. He is a senior member of IEEE and currently he is member of Executive Committee for IEEE Western Saudi Arabia Section.

He is in the steering and technical committees for a number of local and international conferences. Also, he serves as a reviewer and a member of the editorial board in a number of local and International Journals.

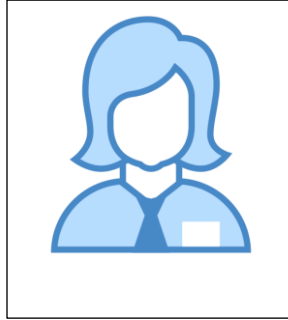
He offered, several security training, including:

- UNIX, Linux Fundamentals
- Information Security Fundamentals
- Windows Security, Network Security
- Critical Security Controls
- CSX: Fundamentals, Practitioner, Specialist and Expert.

**Workshop Track:** Data Science

**Workshop Title:** Big Data Analytics in Weka and RapidMiner

**Presenter:** Dr. Dabiah Ahmed Alboaneen



**Date:** Thursday, December 12, 2019

**Time:** 1:00 pm – 4:00 pm

**Room Number:** 0.801

**Outlines:** The workshop will introduce participants to Weka, an open source data mining software package, and RapidMiner. The goal of this workshop is to demonstrate the basic functionality of Weka and RapidMiner. Weka and RapidMiner provide a lots of machine and deep learning algorithms for data mining tasks, along with useful tools for data pre-processing, statistics and visualization via graphical user interface (GUI). The workshop will present examples of solving real-life classification and clustering problems such as medical diagnosis and texts classification (e.g., sentiment analysis) through machine and deep learning algorithms. We will discuss in details the following steps:

- Dataset collection.
- Data pre-processing.
- Features selection.
- Implementation of machine and deep learning algorithms.
- Evaluation tests.
- Visualization.



**Trainee ‘Level:** Beginner

**Prerequisites skills:** -

**Software Requirements:** Weka – RapidMiner – Twitter Account.

Rapidminer	<a href="https://rapidminer.com/get-started/">https://rapidminer.com/get-started/</a>
Weka	<a href="https://www.cs.waikato.ac.nz/ml/weka/downloading.html">https://www.cs.waikato.ac.nz/ml/weka/downloading.html</a>

**Hardware Requirements:** Laptop

**Presenter biography:** Dr. Dabiah Ahmed Alboaneen is an Assistant Professor of Cloud Computing and Artificial Intelligence. She is a Head of Computer Science Department at College of Science and Humanities in Jubail - University of Imam Abdulrahman Bin Faisal. She was awarded a lot of prizes such as the Best Master Project in Networking and Wireless Communication Prize of the Glasgow Caledonian University in 2013, eleven distinction awards from Saudi cultural bureau in London since 2013, and a distinction award from Saudi Ambassador of the UK, Prince Mohammad bin Nawwaf Al-soud.