

# Technology Diploma

30 Cr (9 months)

## I- Semester Plan

Semester 1	Programming basics	Database Systems	Network Overview	
Semester 2	Advanced Programming	Network 2	Cloud Systems	Web Development
Semester 3	Mobile Applications	Cyber Security and Ethical Hacking	Artificial Intelligence	

II- What can I work with this Diploma?

- Mobile Application Developer
- Programmer
- Information Security Analyst
- Program Tester
- Program Debugger
- Software Programmer
- IT Consultant
- Database administrator
- Game Developer
- Website creator
- Computer System Analyst

III- Where can I work with this Diploma?

- Hardware and Software companies
- Machinery Building premises
- Government Offices
- Game Development centers
- IT offices
- Programming Companies
- Tech companies
- Corporate offices
- Banks
- Network Administration
- Local network distributors
- Internet Providers
- Telecommunication Companies

## IV- Course Description

Semester 1	Programming basics	Database Systems	Network Overview
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### Programming basics: (36 hours- 12 weeks)

Introduction to computer programming, Pseudo-code/Flowchart, input/output, control structures (Sequence, Selection, and Repetition), functions, arrays, and strings.

Application: Python

### Database Systems: (36 hours- 12 weeks)

This course uses the latest database tools and techniques for persistent data and object-modelling and management. Students gain extensive hands-on experience with exercises and a term project using Oracle, SQL Server, or MySQL and other leading database management systems. Students learn to model persistent data using the standard Entity-Relationship model (ERM) and how to diagram those models using Entity-Relationship Diagrams (ERDs) and UML diagrams. Students learn the standards-based Structured Query Language (SQL) and the extensions to the SQL standards implemented in Oracle, SQL Server, MySQL, and Access. Students learn the basics of database programming, and write simple stored procedures and triggers.

### Network Overview: (36 hours- 12 weeks)

The course introduces the student to *Computer Networks*, including the different equipment and protocols of local and wide area networks. The course will discuss also the network topologies and technologies such as 802.11, broadband wireless, ADSL, Bluetooth, gigabit Ethernet, the Web, the wireless Web, streaming audio, IPsec, cryptography and more, using real-world examples and practical labs showing how networks work on the inside, from underlying physical layer hardware up through today's most popular network applications. Students will practice networking planning, deployment, configuration and troubleshooting using simulator software and practical labs.

Application: Physical Lab

Semester 2	Advanced Programming	Network 2	Cloud Systems	Web Development
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### **Advanced Programming: (36 hours- 12 weeks)**

This course of study builds on the skills gained by students in Java Fundamentals and helps to advance Java programming skills. Students will design object-oriented applications with Java and will create Java programs using hands-on, engaging activities, Comprehensive coverage of object-oriented programming with cooperating classes. Implementation of polymorphism with inheritance and interfaces in Java library containers. Programming with exceptions, stream input/output. Application: Java

### **Network 2: (36 hours- 12 weeks)**

This course develops the knowledge and the skills for knowing more about the technologies and the services used in LAN and WAN. As well as, it gives further knowledge on how to scale computer networks using DHCP, NAT and PAT and how to secure networks using Access Control Lists.

Application: Packet Tracer

### **Cloud Systems: (36 hours- 12 weeks)**

This course offers an introduction to cloud computing overview, concepts, and models. This course serves as a basis for understanding the standard cloud terminologies and methodologies needed to implement, maintain, and support cloud technologies and infrastructure, with a practical focus on real-world skills. Topics include cloud service and delivery models, various types of disk storage systems network infrastructure and management, virtualization components, performance tuning, systems management, troubleshooting and security. Mobile Device Management (MDM), business continuity and disaster recovery are also covered.

### **Web Development: (36 hours- 12 weeks)**

This course provides an introduction to web development by way of the essential language and runtime environment that powers modern web interfaces. This is an entry-level programming course, and no prior programming experience is assumed. Exposure to basic HTML and CSS will be helpful, but not required. This course will require students to design and develop standards-based client-server interfaces for Web applications using latest versions of HTML, CSS, jQuery, Bootstrap and Php. Students will study Web-based standards and application/design styles.

Semester 3	Mobile Applications	Cybersecurity and Ethical Hacking	Artificial Intelligence
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### Mobile Applications: (36 hours- 12 weeks)

This project-oriented course will investigate the issues surrounding application development for mobile platforms. First, we will look at techniques for building applications that adapt to the ways in which mobile apps differ from traditional desktop or web-based apps: constrained resources, small screen sizes, varying display resolutions, intermittent network connectivity, specialized sensors, security restrictions, and so forth. Second, we will look at best practices for making mobile applications flexible: using XML-based layouts, managing multimedia, storing user data, networking via NFC and WiFi, determining device location and orientation, deploying applications, and gracefully handling shutdowns and restarts to the application. We will also explore embedding web components in applications, showing maps with the Google Maps plug-in, and storing local data with SQLite. Application: Android

### CyberSecurity and Ethical Hacking: (36 hours- 12 weeks)

This course offers an introduction to virtual private networks (VPNs) and firewalls for securing a network. Various network security-related issues are introduced and examined. Different types of VPNs for securing data in an organizational setup are discussed as well as the benefits and architecture of a VPN. The course focuses also on hacking techniques and technology from an offensive perspective. The student will learn to scan, test, hack and secure systems.

### Artificial Intelligence: (36 hours- 12 weeks)

Artificial intelligence (AI) is a research field that studies how to realize the intelligent human behaviors on a computer. The ultimate goal of AI is to make a computer that can learn, plan, and solve problems autonomously. The main includes: problem solving, reasoning, planning, natural language understanding, computer vision, automatic programming, machine learning and so on. These topics are closely related with each other. For example, the knowledge acquired through learning can be used both for problem solving and for reasoning. In fact, the skill for problem solving itself should be acquired through learning. Also, methods for problem solving are useful both for reasoning and planning. Further, both natural language understanding and computer vision can be solved using methods developed in the field of pattern recognition.

In this course, we will study the most fundamental knowledge for understanding AI. Application: Python



**DIPLOMA  
PROGRAM**

## V- Contact

Ms. Dima Itani

Head of Administration and Registration

MUC University Lebanon

Tel: +961-1-555896 Ext: 109

Ms. Eva El Haj

Admission officer

Tel: +961-1-555896 Ext: 105

Website: [www.muc.edu.lb](http://www.muc.edu.lb)