

UNIVERSITY OF SAIDA DR. MOULAY TAHAR  
 VICE RECTORATE OF EXTERNAL RELATION, COOPERATION,  
 ANIMATION, COMMUNICATION AND SCIENTIFIC EVENTS.  
 HOUSE OF ARTIFICIAL INTELLIGENCE



# TRAINING PROGRAM 2024 / 2025



## 1 ABOUT US

HAI (HOUSE OF ARTIFICIAL INTELLIGENCE) AIMS TO CULTIVATE A VIBRANT AI ECOSYSTEM AT SAIDA UNIVERSITY. BY OFFERING OPPORTUNITIES TO EXPLORE THE VAST FIELD OF ARTIFICIAL INTELLIGENCE, IT EMPOWERS ENTHUSIASTS WHILE ENHANCING VISIBILITY FOR EXPERTS AND INDUSTRIES WITHIN THE DOMAIN.

## 2 TRAININGS



MACHINE  
 LEARNING AND  
 DEEP LEARNING



AI IN  
 DATACENTER



GENERATIVE AI  
 AND AI TOOLS



AI IN MOBILE  
 APPLICATIONS



ROUTING AND  
 SWITCHING



WEB  
 DEVELOPMENT



PYTHON  
 PROGRAMMING



JAVA  
 PROGRAMMING



AI FOR  
 EVERYONE



JAVA  
 PROGRAMMING



## 3 CONTACT



FOR WHOM?  
 STUDENTS AND TEACHERS



WHERE?  
 ERRIADH COMPUS



TRAINING START JAN. 2025

SCAN FOR  
 REGISTRATION



ADDITIONAL INFORMATION WILL BE SENT TO YOU VIA EMAIL ONCE YOUR REGISTRATION IS COMPLETE.



HAI@UNIV-SAIDA.DZ



UNIV-SAIDA.DZ

# Machine learning and deep learning

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**B**ecome a machine learning expert by mastering the core principles of deep learning and unlocking the potential of AI. This program has been recently updated to include the latest, state-of-the-art techniques.

- Enhance your subject matter expertise.
- Acquire in-demand skills from leading universities and industry experts.
- Master a topic or tool through hands-on projects.
- Develop a deep understanding of key concepts.
- Earn a professional certificate from DeepLearning.AI.

## Goals of the specialization

- Build and train deep neural networks, optimize key architecture parameters, and implement vectorized neural networks for deep learning applications.
- Train test sets, perform variance analysis to improve DL model performance, apply standard optimization techniques, and develop neural networks using TensorFlow.
- Create convolutional neural networks (CNNs) for object detection and recognition tasks, use neural style transfer to generate art, and apply algorithms to image and video data.
- Develop and train recurrent neural networks (RNNs), work with natural language processing (NLP) and Word Embeddings, and use tokenizers and HuggingFace transformers to perform tasks such as named entity recognition (NER) and question answering.

## Program

- Classical machine learning techniques
- Introduction to artificial neural network
- Convolutional neural network
- Recurrent neural network
- Generative neural network
- Advanced trends in deep learning and machine learning

By the end of the course, you will be able to:

- Build and train deep neural networks, implement vectorized neural networks, identify architectural parameters, and apply deep learning to your applications.
- Utilize best practices for training and developing test sets, analyze bias and variance to construct deep learning applications, apply standard neural network techniques, implement optimization algorithms, and deploy a neural network in TensorFlow.
- Employ strategies to reduce errors in machine learning systems, understand complex machine learning parameters, and apply end-to-end learning, transfer learning, and multitask learning.

- Construct convolutional neural networks and apply them to visual detection and recognition tasks, utilize neural style transfer to generate art, and apply these algorithms to images, videos, and other 2D/3D data.
- Build and train recurrent neural networks and their variants (GRU, LSTM), apply RNNs to character-level language modeling, work with natural language processing (NLP) and Word Embeddings, and utilize HuggingFace tokenizers and transformers for named entity recognition and question answering.

# Python from zero to masterclass

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**B**ecome a skilled Python programmer. Master the fundamentals and confidently progress to coding independently. This course introduces key programming concepts such as data structures, network application programming interfaces (APIs), and databases using the Python programming language. In the Capstone project, you'll apply the technologies learned throughout the Specialization to design and develop your own data retrieval, processing, and visualization applications.

## Goals of the tutorial :

- Gain in-demand skills from top universities and industry experts.
- Master a subject or tool through hands-on projects and develop a deep understanding of key concepts.
- Earn a professional certificate from the saida University

## Course covered

- Gain a solid foundation in Python programming.
- Develop the expertise and confidence to apply for Python developer positions.
- Acquire the essential Python skills to transition into fields like Machine Learning and Data Science.
- Add Python Object-Oriented Programming (OOP) to your skillset and résumé.
- Learn how to build your own Python applications from scratch.
- Study Python under the guidance of seasoned professional software developers.
- Become proficient in both Python 2 and Python 3.

## Program :

- Introduction
- DEV Tools configuration
- The basic of python
  - o Variables
  - o Conditions
  - o Loops
  - o Table
  - o List and tuples
- Function files, and dictionary in python
- Collect process, and visualise data in python
- Manipulating API in python
- Manipulating database in python
- Python and web development
- More than 10 projects with python from scratch to final product

## Prerequis :

- **Basic computer skills:** Ability to install software and navigate files.
- **Logical thinking:** Understanding of basic logic like conditions and loops.
- **English proficiency:** Many resources and documentation are in English.
- **Analytical mindset:** Ability to approach problems logically.
- **No prior programming experience (for beginner courses):** Some courses may require basic knowledge of data structures.

# Routing and switching

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**T**his course provides an introduction to the Huawei Certified ICT Associate-Level Routing and Switching. It covers fundamental concepts and essential networking knowledge related to routing and switching, offering a solid foundation for further study in these areas.

## Target

Personnel who want to become data communication engineers

Personnel who want to obtain HCIA-R&S certification

## Objectives of the course

On completion of this program, the participants will be able to:

- Describe the basic principles of data communication and be competent for basic O&M of IP networks.
- Plan and design IP addresses.
- Performing Basic VRRP Operations.
- Describe the functions and working principles of the switching equipment.
- Set up an efficient switching network by configuring switching devices and running the STP/RSTP protocol.
- Describe the basic principles of routing and routing protocols. Configure OSPF to build an efficient routing network.
- Configure common services on enterprise networks, such as DHCP, FTP, and Telnet, so that engineer can efficiently use and manage the network.
- Configure link aggregation, VLAN to enhance the performance of Layer two networks.
- Configure HDLC, PPP, PPPoE to implement WAN interconnection.
- Performing NAT Configuration.
- Configure ACL, AAA, and IPSec/GRE to provide security solutions for IP networks.
- Configure SNMP to manage networks in a unified manner.
- Know about principle of MPLS and Segment Routing.

## Program :

Module 1: Introduction to Networking

1. Overview of Networking
  - What is a Network?
  - Types of Networks (LAN, WAN, PAN, MAN)
  - Importance of Routing and Switching in Networks

## 2. Network Components

- Routers, Switches, Hubs, and Gateways
- Cables, Connectors, and Interfaces
- End Devices (PCs, Servers, IoT Devices)

## 3. Network Models and Protocols

- OSI Model vs. TCP/IP Model
- Layered Architecture and Functions
- Common Networking Protocols (HTTP, FTP, DHCP, DNS, etc.)

### Module 2: Switching Concepts

#### 1. Basic Switching Concepts

- What is Switching?
- Switch Functions in a Network
- Layer 2 vs Layer 3 Switching

#### 2. VLAN (Virtual Local Area Networks)

- Purpose of VLANs
- VLAN Configuration
- VLAN Trunking Protocol (VTP)

#### 3. Switching Techniques

- Frame Forwarding, MAC Address Table
- Port Security
- Spanning Tree Protocol (STP) and Redundancy

### Module 3: Routing Concepts

#### 1. Basic Routing Concepts

- What is Routing?
- Static vs Dynamic Routing
- Routing Table Basics

#### 2. Types of Routing Protocols

- Distance Vector vs. Link State Protocols
- RIP (Routing Information Protocol)
- OSPF (Open Shortest Path First)
- EIGRP (Enhanced Interior Gateway Routing Protocol)

#### 3. IP Addressing and Subnetting

- IPv4 vs IPv6
- Subnet Mask and CIDR Notation
- IP Addressing Schemes
- Subnetting and Supernetting Techniques

#### Module 4: Routing and Switching Configuration

1. Basic Configuration of Switches
  - Accessing the Switch (Console, SSH, Telnet)
  - Initial Setup Commands
  - Configuring VLANs and VLAN Trunking
  - Configuring Port Security and STP
2. Basic Router Configuration
  - Accessing the Router (Console, SSH)
  - Setting up IP Addressing and Interfaces
  - Configuring Static Routes
  - Configuring Dynamic Routing Protocols (RIP, OSPF)
3. Routing and Switching Troubleshooting
  - Common Issues and Solutions
  - Ping, Traceroute, and Diagnostic Tools
  - Debugging Routing and Switching Problems

#### Module 5: Advanced Routing and Switching Concepts

1. Advanced Switching Techniques
  - Multi-Layer Switching
  - Quality of Service (QoS)
  - Power over Ethernet (PoE)
2. Advanced Routing Techniques
  - Route Redistribution
  - Policy-Based Routing
  - BGP (Border Gateway Protocol) – Basics and Application
3. WAN Technologies
  - WAN vs LAN Routing
  - MPLS (Multiprotocol Label Switching)
  - VPN (Virtual Private Networks) Basics

## Module 6: Network Security and Best Practices

1. Basic Network Security Concepts
  - Firewall Configurations
  - Access Control Lists (ACLs)
  - VPN Configuration for Secure Communication
2. Best Practices for Routing and Switching
  - Network Segmentation
  - Backup Configurations and Redundancy
  - Load Balancing Techniques
3. Network Monitoring and Management
  - SNMP (Simple Network Management Protocol)
  - Network Performance Monitoring
  - Troubleshooting Techniques and Tools

## Module 7: Practical Labs and Case Studies

1. Lab 1: VLAN Setup and Inter-VLAN Routing
  - Configuring VLANs and Trunking
  - Implementing Inter-VLAN Routing
2. Lab 2: Static vs Dynamic Routing Configuration
  - Configuring Static Routes on Routers
  - Implementing OSPF and RIP on a Sample Network
3. Lab 3: Troubleshooting Scenarios
  - Diagnosing and Resolving Network Failures
  - Using Ping, Traceroute, and other Diagnostic Tools
4. Case Study: Designing and Implementing a Small Business Network
  - Planning, Designing, and Configuring a Network with Realistic Scenarios

## Module 8: Exam Preparation and Certification

1. Huawei Certified ICT Associate-Level Routing & Switching Exam Overview
  - Exam Structure and Key Areas
  - Study Tips and Resources
2. Sample Exam Questions
  - Practice Tests and Review
3. Final Review

- Revisiting Key Concepts
- Hands-on Labs and Simulations

# AI in data Center

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The AI in datacenter certification is an entry-level credential that validates the foundational concepts of adopting artificial intelligence computing in a data center environment.

## Topics covered in the exam include:

- Accelerated computing use cases
- AI, machine learning, and deep learning
- GPU architecture
- NVIDIA's software suite
- Data center considerations for adopting NVIDIA solutions

## Program

- Introduction to AI in datacenter
- GPUs overview
- Consideration for server environment
- Multi systems AI clusters
- Storage consideration for AI
- Networking considerations
- Reference architectures best practice
- Infrastructure provisioning and management
- Cluster orchestration and job scheduling
- Cluster management and monitoring
- Colocation program

# Become an Android Developer: Your Path to Mobile App Mastery

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Kickstart your career as an Android app developer. Gain job-ready skills for a high-demand field and earn a Meta certification. No prior degree or experience is required to get started.

## Goals of the course :

Acquire the essential skills to launch your career as an Android developer.

Learn how to create Android applications, including building and managing the full lifecycle of a mobile app using Android Studio.

Master Kotlin programming and key development concepts to design user interfaces (UI) and implement best practices in app design.

Develop cross-platform mobile applications using React Native. Showcase your new skills by creating a professional portfolio that you can present during job interviews.

## Program

### Introduction to mobile development

- Define the fundamental concepts of Android app development

- Set up and explore the interface, configurations, and built-in tools of Android Studio

- Use the Kotlin playground

- Create a simple Android application

### Version control

- Implement version control systems

- Navigate and configure using the command line

- Use a GitHub repository. Create a GitHub repository

- Manage code revisions

### Basic principle

- Practice building and using functions

- Practice different types of comparisons using operators

- Use Kotlin to solve a coding problem

- Review and apply fundamental programming principles

## **UX/UI conception**

Describe the fundamental principles of user experience (UX) design and research

Explain accessibility considerations in design

Practice developing user empathy through research

Create wireframes and prototypes in Figma

## **Create interface in android studio**

Use UI component libraries to build Android's user interface

Compose the UI using Kotlin UI views

Create a simple UI using the layout editor

Build a basic Android user interface

## **Programming with Kotlin**

Implement an Android application with an activity.

Implement advanced object-oriented features in Android.

Use mocks and fakes to perform unit tests in Android.

Use a Lambda expression to define a function as an object. Utilize collection processing methods for multi-step collection handling.

## **Work with data in android**

Passez en revue certains des outils et paquets les plus utiles pour un développeur Kotlin

Appliquer les coroutines Kotlin dans les applications Android

Intégrer le code d'autres langages dans Kotlin. Construire une application Android pilotée par les données

## **Mobile development and java script**

Create simple JavaScript code

Create and manipulate objects and arrays

Write unit tests using Jest

# Web development

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Learn to build websites with HTML , CSS , JAVASCRIPT , Bootstrap , PHP , MySQL , WordPress & OOP

## RIGHT AFTER THIS COURSE, YOU WILL BE:

- Able to **Build websites**.
- Get a job as a **junior web developer**.
- Start your own **online business with WordPress**.
- Become **Freelancer Web developer on Fiverr or UpWork**.
- Be proficient with **databases and server-side languages** with PHP and MySQL.
- Become a front-end and Back-end developer - **Complete Full Stack Developer**.

In less than 30 days, you'll be ready for an **entry-level job as a Full Stack Web Developer**

This course will give you the following Skills:

## Front End Web Development:

- HTML.
- CSS.
- JAVASCRIPT.
- BOOTSTRAP.

## Back End Web Development:

- PHP.
- MYSQL.
- WORDPRESS.
- PHP OOP.

## BASICS:

- WEB BASICS.
- INTRODUCTION TO XML.
- COMPLETE UNDERSTANDING OF JSON.
- INTRODUCTION TO REST AND API.

## SOFT SKILLS:

- INTERVIEW QUESTIONS.

- PHP RESUME.
- STUDENT MENTORSHIP.

**PROJECTS:**

- PHPKart - Complete Shopping Cart Website using HTML, CSS, JAVASCRIPT, PHP and MySQL.
- LearnWP - Blogging Website with WordPress. (Buy Domain, Web Hosting, Installing Themes and etc.)