



Co-funded by  
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# Cloud practitioner

## Training program



CONSORTIUM PARTNERS

## ABOUT THIS PROGRAM

Femme Forward - *Fast-tracking women into new tech careers and supporting successful female-led start-ups* - is a two-year transnational project funded under the Erasmus+ Programme.

Through an innovative and comprehensive training programme, women with various backgrounds will be empowered to either start a career in tech or employ their experience and knowledge to set up a tech start-up.

Femme Forward will identify, develop and pilot high-quality digital education content that will tackle the current gender gap in the digital economy, enabling at least 500 women to start on the track to tech employment or entrepreneurship.

Femme Forward will offer an easy-to-use and extensive repository of tested, high-quality educational materials, available in multiple languages, and on a multi-device compatible learning platform: [femmeforward.eu](https://femmeforward.eu)

## TARGET AUDIENCE

- Cohorts are 100% female
- Jobseekers and/or women with some level of social vulnerability who could truly benefit from this training program

## LEARNER PREREQUISITES AND SELECTION CRITERIA

- No technical prerequisites,
- A strong motivation for the program and for a career in the cloud
- A general aptitude for IT
- A solid understanding of the profession targeted by the training,
- A desire to work in a team and collaborate on projects
- Commitment to completing the training program and following through with job-seeking purpose

## DURATION AND PACE

This program is 420 hours long, equivalent to a 12-week full-time course (35 hours/week) in its standard modalities, although the length or intensity can be adjusted to local context and constraints (target audience, number of hours/week, internship...). The contents of the program can be roughly broken down according to the following schedule (see below on p.10 for further detail) :

Cloud Foundations	190 hours
Operating Cloud Services	120 hours
Recap, reinforcement and one-to-one mentoring sessions (5 hours weekly)	48 hours
Employability skills and meeting with professionals	62 hours

## TRAINING METHODS

### The 6 pillars of the training model



Our objective is to train skilled professionals who master the culture of the field in which they are trained, possess the technical skills expected in the sector and who are able to update their knowledge, work in a team and solve complex problems.

To this end, the training will implement an active learning approach in its facilitation and training methods, which will not aim not only to transmit knowledge, but most importantly to develop the learners' practical skills.

To this end, the training methods aim to create a favorable environment for the learners allowing them to mobilize professional skills, acquiring them through practice, in particular through exercise and projects which emulate real-life professional contexts.

In particular, each cohort of learners, supported by professional mentors and skilled trainers, will complete a cloud training curriculum, which features scenario-based learning, hands-on labs, projects, and coursework to exercise real-life processes.

In addition to technical skills, the program aims to teach employability skills to prepare learners to succeed in a professional environment by teaching them to think critically, build multi-level projects, plan projects, and communicate effectively.

The training is delivered in person or in a virtual instructor-led delivery when increased flexibility is required.

### **A case for active learning in hybrid and remote contexts**

In 2020, the COVID epidemic forced companies but also training centres to reinvent their organizations.

If the training project includes remote learning, the trainer provides a pedagogical framework and accompanies the learners according to the same pedagogy provided face-to-face: active pedagogy, hands-on projects, with a skills-based approach.

This pedagogy will be implemented in such a way as to be able to best support the learning of each learner, taking into account the constraints imposed by hybrid or remote conditions. The nature of the adaptation of the support received by each learner will not be uniform throughout the cohort, nor throughout the duration of the training. It is a way to personalize learning.

Personalized learning is what makes it possible to guarantee a regular and quality follow-up of learning, according to the needs and constraints of each learner.

## TRAINING TOOLS AND ENVIRONMENT

Face-to-face training takes place remotely, or in physical training rooms, which must be equipped with:

- Tables and chairs

- Wi-Fi Internet access for each Learner and Program Instructor that can sustain a 5Mbps connection (as measured at speedtest.net) and support outbound RDP (TCP/3389) and SSH (TCP/22) traffic;
- Whiteboard, chalkboard, or flip charts for the Program Instructor;
- Projector and projection screen;
- IT support;
- Program Instructor workspace for session preparation, materials prep, printing, etc.

Each learner is assigned a laptop for the duration of the training.

The conditions for monitoring remote training must be conducive to learning. If necessary, solutions can be offered to learners (loan of equipment, connection troubleshooting, specific follow-up, etc.).

## TRAINING TEAM

Training is provided by at least one trainer if not several, including the lead trainer.

Each trainer must follow a trainer onboarding process, which will be provided by the consortium.

Learners are supervised by a multidisciplinary training team, who covers the following different roles :

- A project manager: manages the training project from start to finish: from sourcing and selection of learners to their professional integration.
- A lead trainer: in charge of designing/adapting training schedule and materials, and delivering the training
- One or several co-trainer(s): support the lead trainer in the facilitation of the training design and delivery.
- A job coach: in charge of supporting the learners' job-seeking skills and helping them identify and respond to professional opportunities

The team:

- Informs the target audience, and/or the organizations supporting them, detects potential talents and selects them
- Defines stages for learners' progress
- Facilitates the acquisition of knowledge and skills
- Guarantees the implementation of the pedagogical approach
- Tracks learners' attendance
- Assesses learner's skills acquisition
- Organizes interactions between learners and professionals
- Supports learners in their professional integration
- Contribute to promoting the training course to all stakeholders

## TRAINING OBJECTIVES AND CERTIFICATION

The program helps individuals build skills around cloud platform services and covers the foundational introduction of Cloud concepts as the advantages of Cloud Technologies, key technologies offered through the Cloud (Computing, Storage, Networking, Security, and Database) and Programming concepts.

In addition to technical skills, the program aims to equip learners with employability skills to prepare them to succeed in a professional environment by teaching them to think critically, build multi-level projects, plan projects, and communicate effectively.

In order to carry out the activities of a Cloud Practitioner and to facilitate the learner's integration into a professional environment, the program aims to develop the following target skills :

- Provision and configure a cloud platform's core services and infrastructure components
- Monitor, measure and report on infrastructure load and performance
- Automate sysadmin tasks in a cloud platform environment by designing, coding and testing simple programs/scripts using Python and Bash
- Configure basic network components and assist in the resolution of network problems
- Assist with security configurations and monitor security events
- Carry out routine database maintenance and administration tasks.
- Carry out routine allocation and configuration of storage with a cloud storage system

These skills will be assessed throughout training and learners will be awarded a training certificate upon graduation if they have demonstrated the acquisition of the aforementioned skills.

In addition, and in order to increase learners' employability, learners will be encouraged and supported in taking the AWS Cloud Practitioner certification exam which measures the following capabilities:

- Explain the value of the AWS Cloud
- Understand and explain the AWS shared responsibility model
- Understand security best practices
- Understand AWS Cloud costs, economics, and billing practices
- Describe and position the core AWS services, including compute, network, databases, and storage
- Identify AWS services for common use cases

## PROFESSIONAL ROLE AFTER TRAINING

Individuals graduating from the Cloud Practitioner training program are ready for roles in several areas, including:

- Data Center technician performing configurations directed and designed by others
- Technical support (first line of triage in simple infrastructures and core cloud services)
- Automation of simple tasks through Python scripting, including in a cloud environment
- Basic networking configurations and debugging
- Simple cloud platform configurations

Graduates have the foundational skills to progress to work on more advanced tasks after a few months on the job. Below are some examples of tasks graduates can take on after a few months in the role:

- Customer support (progressively complex triage scenarios)
- Software Engineering/Junior DevOps, automating tasks of growing complexity
- Supporting cloud deployment (configuration, automation, and debugging)
- Development and/or automation on cloud platforms

## MOBILIZING ESSENTIAL SOFT SKILLS FOR PROFESSIONAL ENVIRONMENTS

Cross-cutting skills, also known as soft skills, are identified in learning situations emulating professional situations. They have, to be mobilized by the learners,

evaluated and valued throughout the training course, in the same way as the other professional skills targeted by the training.

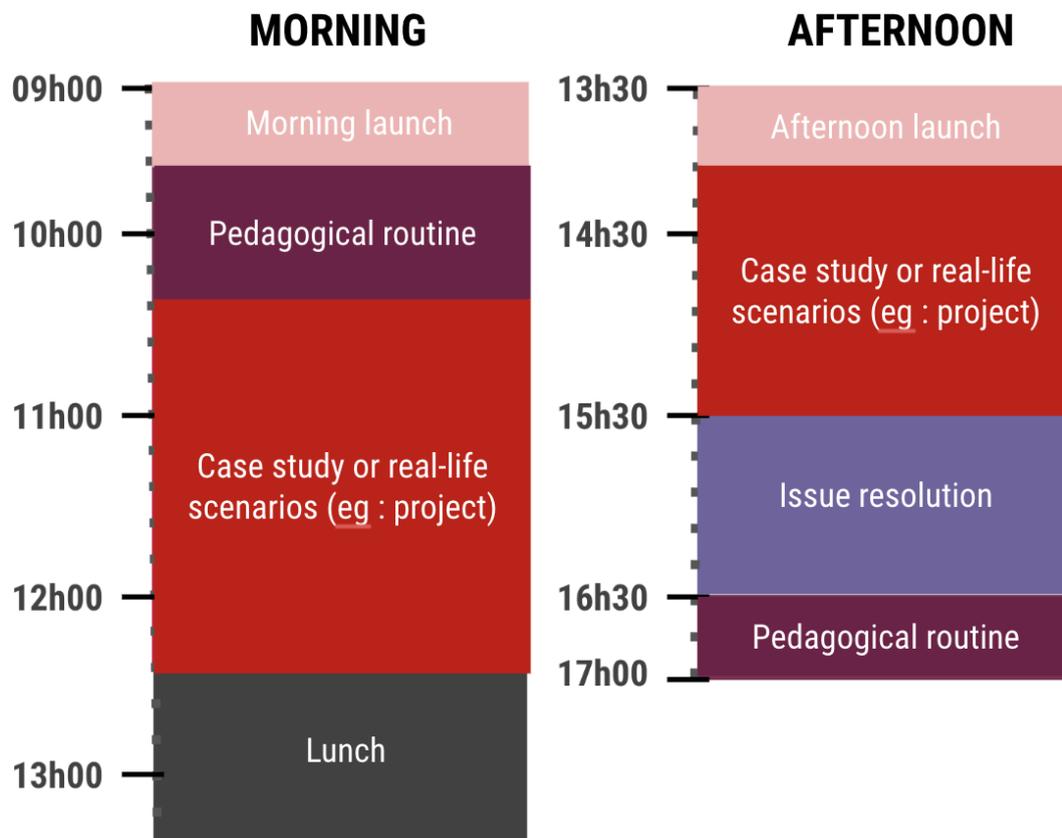
3 main activities are thus identified:

- Organize individual and collective work in a professional environment.
- Adopt a problem-solving approach.
- Communicate orally and in writing in a professional environment.

To carry out these activities, the IT professional must rely on the skills that we have identified in the various professional activities in which we train learners:

- Plan the work individually and as a team in order to optimize the effort necessary to achieve an objective, using the appropriate digital tools.
- Contribute to the management of individual and collective work in order to facilitate communication, collaboration and management of contingencies within the team
- Define the scope of a problem by adopting an inductive approach in order to search for a solution
- Methodically search for solutions to a problem in order to resolve it
- Share a solution by using means of knowledge sharing or documentation in order to contribute to the development of the team's knowledge.
- Present a work carried out by summarizing its results and choices, and answering questions from the decision-maker
- Become familiar with the codes and culture-specific to a given professional environment in order to facilitate one's integration
- Interact in a professional context respectfully and constructively in order to foster collaboration
- Facilitate a collective work session by ensuring constructive communication between participants in a clear working environment and allowing for everybody's participation

## A TYPICAL DAY

**Launch**

The trainer launches the learning session. He or she can take advantage of this opportunity to gauge the morale of the learners, and conduct a group cohesion activity or a pedagogical wake-up routine.

**Case study or real-life scenarios**

Our training courses are based on learning situations and pedagogical methods, that are specified by the trainer. The trainer indicates to the learners whether the tasks at hand are to be carried out individually or in a group, specifies the time constraints, the collaborative tools to be used, etc. The trainer can be called upon at any time during the implementation of the situation by the learners to address individual or collective difficulties according to the methods he or she deems most appropriate (individual or group revisions, peer learning, mixing up the groups, guided activities, etc.).

**Issue resolution** *(not necessarily every day)*

At the end of a certain learning situation, issue resolution sessions can be done together, in small groups, or individually to review the tasks that have been performed, the associated resources and how they were used to overcome obstacles.

## Pedagogical routine

In addition, there are **rituals of pedagogical wake-up, monitoring and reflective analysis** that allow the learners to reflect on what he or she has learned, done and acquired thanks to the situation they have worked on.

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## WEEK 1 – INTRODUCTION, CLOUD FOUNDATIONS

- Program onboarding: welcome, expectations and curriculum overview
- Self-assessment: defining your profile and goals
- Commitment to the program's values and objectives
- Brainstorming activity on Cloud
- Introduction to computing and advantages of Cloud Computing
- Discovering Cloud professional roles and setting career goals
- Communication and STAR methodology
- Introduction to cloud platforms: infrastructure, services and pricing
- Introductory hands-on activities to operate Cloud platforms
- Recap and quiz: Cloud Foundations

## WEEK 2 - LINUX

- Introduction to Linux
- Linux Command Line
- Users and Groups
- Editing Files
- Working with the File System
- Working with Files
- Managing File Permissions
- Managing Processes
- Managing Services
- Managing Networking
- Software Management
- Managing Log Files
- Working with Commands
- Soft Skills activity: Focusing on customers

## WEEK 3 – LINUX, NETWORKING

- The Bash Shell
- Bash Shell Scripting
- Review Linux
- Introduction to Networking
- Networking Concepts
- Internet Protocol (IP) and IP addressing
- IP Subnetting
- IP Networking in Cloud Platforms
- Virtual Private Clouds
- Other Common Protocols
- Introduction to Network Security
- Threat Mitigation
- Research Anti-Malware
- Emerging Technologies
- Research MDM Software
- Soft Skills activities: Emotional intelligence and Learning how to learn
- Meeting with Cloud professionals

## WEEK 4 – NETWORKING, SECURITY

- Review Networking
- Introduction to Security
  - Connecting to Vocareum cloud
  - Increase your security awareness
  - Interpret scanning results
- Security Life Cycle - Prevention: Systems Hardening
- Security Life Cycle - Prevention: Security Architecture
- Security Life Cycle - Prevention: Network Hardening
- Security Life Cycle - Prevention: Data Security
- Security Life Cycle - Prevention: Public Key Infrastructure
- Security Life Cycle - Prevention: Identity Management
  - Identity and Access Management in Cloud platforms
- Security Life Cycle - Detection
  - Detect malware
  - Social engineering
  - Penetration testing
- Security Life Cycle - Response
- Security Life Cycle - Analysis
  - Monitor a system
- Soft Skills activities: Digital presence and Interview preparation & practice
- Meeting with Cloud professionals

## WEEK 5 – SECURITY, PYTHON PROGRAMMING

- Review Networking
- Opening Accounts on Cloud Platforms
- Security Compliance and Resources on Cloud Platforms
- Introduction to Programming - What is Programming?
- Introduction to Programming - Categorize a Value as a Data Type
  - Numeric data type
  - String data type
  - List, tuple, dictionary
  - Categorize value
- Introduction to Programming - Combine Values into Composite Data Types
- Introduction to Programming - Functions
- Introduction to Programming - Follow the Execution Path of a Program
  - Conditionals
  - Loops
- Introduction to Programming - Version Control
  - Setting up a Git repository
- Introduction to Python
  - Preparing to analyze insulin with Python
  - Python Basic
  - Working with the string sequence and numeric weight of insulin with Python
  - Calculating the net charge of insulin using Python
- Flow control
- Soft Skills activities: Hiring process and Interview preparation & practice, Have a Backbone

## WEEK 6 – PYTHON PROGRAMMING, DATABASES

- Python Functions
- Python Mods and Libraries
- Python for System Administration
- Python Debugging and Testing
- DevOps and Continuous Integration
- DevOps tools
- The value of automation
- Compare and contrast automation and orchestration
- Configuration Management
- Python: class challenge and review
- Introduction to Databases
- Creating Tables and Learning Different Data Types
- Inserting Data into a Database
- Soft Skills activities: Exploring Cloud Job Postings

## WEEK 7 – DATABASES

- Selecting Data from a Database
- Performing a Conditional Search
- Working with Functions
- Organizing Data
- Retrieving Data from Multiple Tables
- Transactions and Tables
- Build Your DB Server and Interact with your DB using an App
- Build and Access a Remote Desktop Services Server
- Soft Skills activities: Work on Resume, Interview Practice and Networking

## WEEK 8 – CLOUD PLATFORM ARCHITECTURE, SYSTEMS OPERATIONS OVERVIEW, TOOLING AND AUTOMATION, COMPUTE SERVERS

- Technical thought process
- Cloud Adoption Framework
- Well-Architected Framework (WAF)
- Reliability and High Availability
- Transitioning a Data Center to the Cloud
- Systems Operations
- Identity and Access Management (IAM) Review and Demonstration
- Command Line Interface
- Tooling and Automation
- Systems Manager
- Administration and Development Tools
- Creating and Hosting a static website on a Cloud platform
- Introduction to computing (servers)
- Creating and managing instances
- Soft Skills activities: Work on Resume, Interview Practice and Networking

## WEEK 9 – COMPUTING CLOUD SERVICES

- Linux EC2 Instance
- AWS Elastic Beanstalk
- Introduce Computing (Scaling and Name Resolution)
- DNS Cloud services
- Low-Latency Content Delivery Network (CDN)
- Scale and Load Balance Your Architecture
  - Elastic Load Balancing
  - ELB Load Balancers and Listeners
  - Automatic Scaling
- Introduce Compute (Containers and Serverless)
- Serverless computing services
- APIs and REST
- Serverless Workflow Orchestration
- Introduce Compute (Databases)
- Cloud Data Warehouse

## WEEK 10 – NETWORKING, STORAGE AND ARCHIVING

- Database Cloud Services
- Database Migration Services
- Cloud Networking
- Virtual Private Clouds
- Securing and Troubleshooting Your Network
- Configuring a VPC
- Introduce Storage and Archiving
- Cloud Storage Overview
- Block-level storage
- Elastic file system
- Cloud services for data archiving and backup
- Cloud Object Storage
- Managing Storage
- Data Transfer and Migration Services
- Soft Skills activities: Work on Resume, Elevator pitch and Interview practice

## WEEK 11 - MONITORING AND SECURITY, MANAGING RESOURCE CONSUMPTION, CREATING AUTOMATED AND REPEATABLE DEPLOYMENTS

- Introduce Monitoring and Security
- Real-time monitoring
- Logs and Events
- Monitoring your applications and infrastructure
- Interactive SQL - Serverless Query Service
- Introduce Managing Resource Consumption
- Tagging
- Managing Resources with Tagging
- Cost Management and Billing Best Practices
- Cloud Support Services
- Introduce Creating Automated and Repeatable Deployments
- Creating Automated and Repeatable Deployments
- AMI Building Strategy
- Infrastructure as Code
- Introduction to JSON and YAML
- Troubleshooting Infrastructure as Code
- Soft Skills activities: Networking event

## WEEK 12 – CERTIFICATION PREPARATION

- Preparing AWS's Cloud Practitioner Certification
  - Cloud Practitioner Essentials
  - Review product FAQ, review AWS, AWS whitepapers, exam blueprint
  - Mock exam
- Taking the Cloud Practitioner exam
- Soft Skills activities: Work on resume, Interview practice, Networking event and company visit