Deputy of training

Plan and curriculums office

# Competency Training standard

# Title

**Developing Windows Azure™ and Web Services**

# Occupational group

## Information Technology (IT)

### International code

| 2523-53-116-1 |
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**Revision Process:**
**- Scientific content**
**- According to market**
**- Equipment**
**- Tools**

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### **Definitions**:

### **Job standard:**

The characteristics ' required competencies and abilities for Efficient Performance in work environment is called "the Job standard", and sometimes "The Occupational standard"

### **Training standard:**

The Training Map for achieving the Job's subset Competencies.

### **Job title:**

Is a set of Tasks and Abilities which is expected from an employed person in the defined level

### **Job description:**

A statement covering the most important elements of a job, namely the position or title of the job, the duties, job's relation with other jobs in a occupational field, the responsibilities, workplace conditions and required performance standards.

### **Course duration**:

The minimum of time which is required to achieve the training objects.

### **Admission requirements:**

The minimum of competencies and abilities which are obligatory for a potential admission.

### **Evaluation:**

The process of collecting evidence and judgment about wetter a competency is achieved or not. Include: written examination, practical examination

### Required Qualifications for Trainers**:**

The minimum of Trainer's technical and vocational abilities which the trainer is required to have.

### **Competency:**

The ability of efficient performing a duty in a variety of workplaces conditions

### Knowledge:

The minimum set of facts and mental capacities which is necessary for achieving a competency. This can include science, (Mathematics, physics, chemistry or biology), technology or technical.

### **Skill:**

The minimum coordination between mind and body for achieving an ability or competency. It normally applied to practical skills.

### **Attitude:**

A set of emotional behaviors required for achieving a competency and can have non-technical skills and occupational ethics.

### **Safety:**

The cases which doing or not doing something can cause harm or accident

### **Environmental Consideration:**

A set of consideration about the act which should be done to minimize the environmental damage or pollution.

| competency title: |
| --- |
| Developing Windows Azure™ and Web Services |
| **competency description:** |
| In this course, students will learn how to design and develop services that access local and remote data from various data sources. Students will also learn how to develop and deploy services to hybrid environments, including on-premises servers and Windows Azure. This course is intended for both novice and experienced .NET developers who have a minimum of six months programming experience, and want to learn how to develop services and deploy them to hybrid environments. After completing this course, students will be able to: |

After completing this course, students will be able to:

- Query and manipulate data with Entity Framework
- Use ASP.NET Web API to create HTTP-based services and consume them from .NET and non-.NET clients
- Extend ASP.NET Web API services using message handlers, model binders, action filters, and media type formatters
- Create SOAP-based services with the Windows Communication Foundation (WCF) and consume them from .NET clients
- Apply design principles to service contracts and extend WCF services using custom runtime components and behaviors
- Secure WCF services using transport and message security
- Use Windows Azure Service Bus for relayed messaging and brokered messaging using queues and topics
- Host services on on-premises servers, and on various Windows Azure environments, such as Web Roles, Worker Roles, and Web Sites
- Deploy services to both on-premises servers and Windows Azure
- Store and access data in Windows Azure Storage, and configure storage access rights
- Monitor and log services, both on-premises and in Windows Azure
- Implement federated authentication by using ACS with ASP.NET Web API services
- Create scalable, load-balanced services

**admission requirements:**

Minimum Degree Of Education: Post first year of high school

Minimum physical and mental ability:
Prerequisite Skills: Before attending this course, students must have:

- Experience with C# programming, and concepts such as Lambda expressions, LINQ, and anonymous types.
- Understanding the concepts of n-tier applications.
- Experience with querying and manipulating data with ADO.NET.
- Knowledge of XML data structures.

| Course duration: |
|---|
| Course Duration: 50 Hours<br> -Theoretical:10 Hours<br>-Practical:30 Hours<br>-Apprenticeship:0 Hours<br>-Project:10 Hours |
| **Evaluation :(%)** |
| Exam 70-487<br><br>Visual Studio<br><br>**Published:** October 17, 2012<br><br>**Languages:** English, Chinese (Simplified), French, German, Japanese, Portuguese (Brazil)<br><br>**Audiences:** Developers<br><br>**Technology:** Microsoft Visual Studio 2013, Microsoft Azure<br><br>**Credit toward certification:** MCP, MCSD |
| **Required Qualifications for Trainers** |
| Essentials of Developing Windows® Store Apps Using HTML5 and JavaScript degree holders with 5 years experiences |

**competency training standard**

**tasks**

| ` | Title |
|---|---|
| 1 | Module 1: Overview of service and cloud technologies |
| 2 | Module 2: Querying and Manipulating Data Using Entity Framework |
| 3 | Module 3: Creating and Consuming ASP.NET Web API Services |
| 4 | Module 4: Extending and Securing ASP.NET Web API Services |
| 5 | Module 5: Creating WCF Services |
| 6 | Module 6: Hosting Services |
| 7 | Module 7: Windows Azure Service Bus |
| 8 | Module 8: Deploying Services |
| 9 | Module 9: Windows Azure Storage |
| 10 | Module 10: Monitoring and Diagnostics |
| 11 | Module 11: Identity Management and Access Control |
| 12 | Module 12: Scaling Services |
| 13 | Module 13: Appendix A: Designing and Extending WCF Services |
| 14 | Module 14: Appendix B: Implementing Security in WCF Services |

Training standard

Contents analysis form

| Title: Overview of Service and Cloud Technologies | time | | | |
|---|---|---|---|---|
| | Theoretical | practical | total | |
| | Determined by the instructor | | | |

| Knowledge ,skill ,attitude ,safety, Environmental Consideration | Equipments ,tools, materials ,books |
|---|---|

| **Knowledge and Skill:** | Determined by the instructor | | | From **Microsoft** |
|---|---|---|---|---|
| - Key Components of Distributed Applications | | | | |
| - Data and Data Access Technologies | | | | |
| - Service Technologies | | | | |
| - Cloud Computing - Exploring the Blue Yonder Airlines' Travel Companion Application - Exploring the work environment -Creating a Windows Azure SQL Database - Creating an Entity Data model - Managing the Entity Framework Model with an ASP.NET Web API Project - Deploying a web application to Windows Azure | | | | |

Attitude:

Speed and accuracy in doing the right thing

Health & Safety:

Compliance with safety protection in the workplace

Environmental Consideration:

Compliance with environmental protection

Training standard

Contents analysis form

| **Title:** Querying and Manipulating Data Using Entity Framework | Time | | | |
|---|---|---|---|---|
| | theoretical | practical | Total | |
| | Determined by the instructor | | | |

| Knowledge ,skill ,attitude ,safety, Environmental Consideration | | Equipments ,tools, materials ,books |
|---|---|---|
| **Knowledge and Skill:** - ADO.NET Overview - Creating an Entity Data Model - Querying Data - Manipulating Data - Creating a Data Access Layer by Using Entity Framework - Creating a Data Model - Querying and Manipulating Data | Determined by the instructor | From **Microsoft** |
| Attitude: Speed and accuracy in doing the right thing | | |
| Health & Safety: Compliance with safety protection in the workplace | | |
| Environmental Consideration: Compliance with environmental protection | | |

Training standard

Contents analysis form

| Title:<br><br>Creating and Consuming ASP.NET Web API Services | Time | | | |
|---|---|---|---|---|
| | theoretical | practical | Total | |
| | Determined by the instructor | | | |

| Knowledge ,skill ,attitude ,safety, Environmental Consideration | | Equipment's ,tools, materials ,books |
|---|---|---|
| **Knowledge and Skill:** | Determined by the instructor | From **Microsoft** |
| - HTTP Services | | | | |
| - Creating an ASP.NET Web API Service | | | | |
| - Handling HTTP Requests and Responses | | | | |
| - Hosting and Consuming ASP.NET Web API Services | | | | |
| - Creating the Travel Reservation ASP.NET Web API Service | | | | |
| - Creating an ASP.NET Web API Service | | | | |
| - Consuming an ASP.NET Web API Service | | | | |
| Attitude:<br>Speed and accuracy in doing the right thing | | |
| Health & Safety:<br>Compliance with safety protection in the workplace | | |
| Environmental Consideration:<br>Compliance with environmental protection | | |

Training standard

Contents analysis form

| Title: Extending and Securing ASP.NET Web API Services | Time | | | |
|---|---|---|---|---|
| | theoretical | practical | Total | |
| | Determined by the instructor | | | |

| Knowledge ,skill ,attitude ,safety, Environmental Consideration | | | | Equipment's ,tools, materials ,books |
|---|---|---|---|---|
| **Knowledge and Skill:**<br><br>- The ASP.NET Web API Pipeline<br>- Creating OData Services<br>- Implementing Security in ASP.NET Web API Services<br>- Injecting Dependencies into Controllers<br>- Extending Travel Companion's ASP.NET Web API Services<br>- Creating a Dependency Resolver for Repositories<br>- Adding a New Media Type for RSS Requests<br>- Adding OData Capabilities to the Flight Schedule Service<br>- Applying Validation Rules in the Booking Service<br>- Secure the communication between client and server | Determined by the instructor | | | From **Microsoft** |
| | | | | |
| Attitude:<br><br>Speed and accuracy in doing the right thing | | | | |
| Health & Safety:<br><br>Compliance with safety protection in the workplace | | | | |
| Environmental Consideration:<br><br>Compliance with environmental protection | | | | |

Training standard

Contents analysis form

| Title: Creating WCF Services | Time | | | |
|---|---|---|---|---|
| | theoretical | practical | Total | |
| | Determined by the instructor | | | |

| Knowledge ,skill ,attitude ,safety, Environmental Consideration | | | | Equipment's ,tools, materials ,books |
|---|---|---|---|---|
| **Knowledge and Skill:** <br> - Advantages of Creating Services with WCF <br> - Creating and Implementing a Contract <br> - Configuring and Hosting WCF Services <br> - Consuming WCF Services <br> - Creating and Consuming the WCF Booking Service <br> - Creating the WCF Booking Service <br> - Configuring and Hosting the WCF Service <br> - Consuming the WCF Service from the ASP.NET Web API Booking Service | Determined by the instructor | | | From **Microsoft** |
| | | | | |
| Attitude: <br> Speed and accuracy in doing the right thing | | | | |
| Health & Safety: <br> Compliance with safety protection in the workplace | | | | |
| Environmental Consideration: <br> Compliance with environmental protection | | | | |

Training standard

Contents analysis form

| **Title:**<br><br>Hosting Services | Time | | | |
|---|---|---|---|---|
| | theoretical | practical | Total | |
| | Determined by the instructor | | | |
| Knowledge ,skill ,attitude ,safety, Environmental Consideration | | | | Equipment's ,tools, materials ,books |
| **Knowledge and Skill:**<br><br>- Hosting Services On-Premises<br>- Hosting Services in Windows Azure<br>- Hosting Services<br>- Hosting the WCF Services in IIS<br>- Host the ASP.NET Web API Services in a Windows Azure Web Role<br>- Host the Flights Management Web Application in a Windows Azure Web Site | Determined by the instructor | | | From **Microsoft** |
| Attitude:<br><br>Speed and accuracy in doing the right thing | | | | |
| Health & Safety:<br><br>Compliance with safety protection in the workplace | | | | |
| Environmental Consideration:<br><br>Compliance with environmental protection | | | | |

Training standard

Contents analysis form

| Title: | Time | | | |
|---|---|---|---|---|
| | theoretical | practical | Total | |
| Windows Azure Service Bus | Determined by the instructor | | | |

| Knowledge ,skill ,attitude ,safety, Environmental Consideration | | | | Equipment's ,tools, materials ,books |
|---|---|---|---|---|
| **Knowledge and Skill:** | Determined by the instructor | | | From **Microsoft** |
| - What Are Windows Azure Service Bus Relays? | | | | |
| - Windows Azure Service Bus Queues | | | | |
| - Windows Azure Service Bus Topics | | | | |
| - Use a Service Bus Relay for the WCF Booking Service | | | | |
| - Publish Flight Updates to Clients by Using Windows Azure Service Bus Queues | | | | |
| Attitude: Speed and accuracy in doing the right thing | | | | |
| Health & Safety: Compliance with safety protection in the workplace | | | | |
| Environmental Consideration: Compliance with environmental protection | | | | |

Training standard

Contents analysis form

| Title: | Time | | | |
|---|---|---|---|---|
| | theoretical | practical | Total | |
| Deploying Services | Determined by the instructor | | | |

| Knowledge ,skill ,attitude ,safety, Environmental Consideration | | | | Equipment's ,tools, materials ,books |
|---|---|---|---|---|
| **Knowledge and Skill:** | Determined by the instructor | | | From **Microsoft** |
| - Web Deployment with Visual Studio 2012 | | | | |
| - Creating and Deploying Web Application Packages | | | | |
| - Command-Line Tools for Web Deploy | | | | |
| - Deploying Web and Service Applications to Windows Azure | | | | |
| - Continuous Delivery with TFS and Git | | | | |
| - Best Practices for Production Deployment | | | | |
| - Deploying an Updated Service to Windows Azure | | | | |
| - Exporting and importing an IIS deployment package | | | | |
| Attitude: Speed and accuracy in doing the right thing | | | | |
| Health & Safety: Compliance with safety protection in the workplace | | | | |
| Environmental Consideration: Compliance with environmental protection | | | | |

Training standard

Contents analysis form

| Title:

Windows Azure Storage | Time | | | |
|---|---|---|---|---|
| | theoretical | practical | Total | |
| | Determined by the instructor | | | |

| Knowledge ,skill ,attitude ,safety, Environmental Consideration | Equipment's ,tools, materials ,books |
|---|---|

| **Knowledge and Skill:**
- Introduction to Windows Azure Storage
- Windows Azure Blob Storage
- Windows Azure Table Storage
- Windows Azure Queue Storage
- Restricting Access to Windows Azure Storage
- Storing Content in Windows Azure Storage
- Storing Content in Windows Azure Table Storage
- Creating Shared Access Signatures for Blobs | Determined by the instructor | | | From **Microsoft** |
|---|---|---|---|---|
| | | | | |

Attitude:

Speed and accuracy in doing the right thing

Health & Safety:

Compliance with safety protection in the workplace

Environmental Consideration:

Compliance with environmental protection

Training standard

Contents analysis form

| Title:  Monitoring and Diagnostics | Time | | | |
|---|---|---|---|---|
| | theoretical | practical | Total | |
| | Determined by the instructor | | | |

| Knowledge ,skill ,attitude ,safety, Environmental Consideration | | | | Equipment's ,tools, materials ,books |
|---|---|---|---|---|
| **Knowledge and Skill:**  - Performing Diagnostics by Using Tracing  - Configuring Service Diagnostics  - Monitoring Services Using Windows Azure Diagnostics  - Collecting Windows Azure Metrics  - Configuring WCF Tracing and Message Logging  - Configuring Windows Azure Diagnostics | Determined by the instructor | | | From **Microsoft** |
| Attitude:  Speed and accuracy in doing the right thing | | | | |
| Health & Safety:  Compliance with safety protection in the workplace | | | | |
| Environmental Consideration:  Compliance with environmental protection | | | | |

Training standard

Contents analysis form

| Title: | Time | | | |
|---|---|---|---|---|
| | theoretical | practical | Total | |
| Identity Management and Access Control | Determined by the instructor | | | |

| Knowledge ,skill ,attitude ,safety, Environmental Consideration | | | | Equipment's ,tools, materials ,books |
|---|---|---|---|---|
| **Knowledge and Skill:** | Determined by the instructor | | | From **Microsoft** |
| - Claims-Based Identity Concepts | | | | |
| - Using The Windows Azure Access Control Service | | | | |
| - Configuring Services To Use Federated Identities | | | | |
| - Handling Federated Identities On The Client Side - Configuring Windows Azure Acs - Integrating Acs With The Asp.Net Web Api Project - Deploying The Web Application To Windows Azure And Configure The Client App | | | | |
| Attitude: Speed and accuracy in doing the right thing | | | | |
| Health & Safety: Compliance with safety protection in the workplace | | | | |
| Environmental Consideration: Compliance with environmental protection | | | | |

Training standard

Contents analysis form

| Title:<br>Scaling Services | Time | | | |
|---|---|---|---|---|
| | theoretical | practical | Total | |
| | Determined by the instructor | | | |

| Knowledge ,skill ,attitude ,safety, Environmental Consideration | | | | Equipment's ,tools, materials ,books |
|---|---|---|---|---|
| Knowledge and Skill:<br>- Introduction To Scalability<br>- Load Balancing<br>- Scaling On-Premises Services With Distributed Cache<br>- Windows Azure Caching<br>- Caveats Of Scaling Services<br>- Scaling Globally<br>- Use Windows Azure Caching | Determined by the instructor | | | From **Microsoft** |
| | | | | |
| Attitude:<br>Speed and accuracy in doing the right thing | | | | |
| Health & Safety:<br>Compliance with safety protection in the workplace | | | | |
| Environmental Consideration:<br>Compliance with environmental protection | | | | |

Training standard

Contents analysis form

| Title: | Time | | | |
|---|---|---|---|---|
| Appendix A: Designing and Extending WCF Services | theoretical | practical | Total | |
| | Determined by the instructor | | | |
| Knowledge ,skill ,attitude ,safety, Environmental Consideration | | | | Equipment's ,tools, materials ,books |
| Knowledge and Skill:<br>- Applying Design Principles To Service Contracts<br>- Handling Distributed Transactions<br>- Extending The WCF Pipeline<br>- Create A Custom Error Handler Runtime Component<br>- Add Support For Distributed Transactions To The WCF Booking Service | Determined by the instructor | | | From Microsoft |
| Attitude:<br>Speed and accuracy in doing the right thing | | | | |
| Health & Safety:<br>Compliance with safety protection in the workplace | | | | |
| Environmental Consideration:<br>Compliance with environmental protection | | | | |

Training standard

Contents analysis form

| **Title:** Appendix B: Implementing Security in WCF Services | Time | | | |
|---|---|---|---|---|
| | theoretical | practical | Total | |
| | Determined by the instructor | | | |
| Knowledge ,skill ,attitude ,safety, Environmental Consideration | | | | Equipment's ,tools, materials ,books |
| Knowledge and Skill:<br>- Introduction To Web Services Security<br>- Transport Security<br>- Message Security<br>- Configuring Service Authentication And Authorization<br>- Securing The WCF Service<br>- Using Authorization Rules To Validate The Client's Requests<br>- Configure The ASP.NET Web API Booking Service For Secured Communication | Determined by the instructor | | | From **Microsoft** |
| Attitude:<br>Speed and accuracy in doing the right thing | | | | |
| Health & Safety:<br>Compliance with safety protection in the workplace | | | | |
| Environmental Consideration:<br>Compliance with environmental protection | | | | |

Equipment & Tools & Materials & Resources (books, site, software…) form

  *Required quantity for each 15 Trainees

 **From: Microsoft**