



*Ministry of cooperatives
Labour and Social Welfare*



*Iran Technical and Vocational
Training Organization*

Deputy of training
Plan and curriculums office

Competency Training standard

Title

Developing ASP.NET MVC 4 Web Applications

Occupational group

Information Technology (IT)

International code

2523-53-117-1

Date of standard compilation: : 2015/12/15

Control of board on content compilation and accreditation: Plan and curriculums office
National code:2523-53-117-1

Member of Specialized commission IT Curriculum development:

- Ali Mosavi: Iran TVTO Curriculum Development Office
- Mahmoud Taghipour Director Manager of Chaharmahal va Bakhtiary TVTO
- Morteza Mohammadian Dehkordi: Member of Iran TVTO IT Curriculum Development
- Hassan Solimany: Member of Iran TVTO IT Curriculum Development
- Sarang Ghorbanian: Member of Iran TVTO IT Curriculum Development
- Dariush Esmaili: Member of Iran TVTO IT Curriculum Development
- Shahram Shokofian: Manager of Iran TVTO IT Curriculum Development

Cooperator Specialized organizations for compiling the training standard :

- Iran Information Technology Development Co
- Iran Information Technology Development University
- Charmahal and Bakhtiari Technical and Vocational Training Organization
- Qazvin Unit Azad University
- Sharekord Center Technical and Vocational Training Organization

Revision Process:

- Scientific content
- According to market
- Equipment
- Tools

Plan & Curriculum Office
97, nosrat avenue –Tehran, Iran

Tel:+98-21-66569900-9

Fax: +98-21-66944117

E-mail:Barnamehdarci@yahoo.com

	Name & Family name	Academic document	field	Job & post	Relevant experiences	Add & Tel & Email
1	Hamid Reza Bakhshi	PhD	Electrical & Telecommunications	Associate Professor	Qazvin Unit Azad University	Qazvin University Avenue - Blvd Nokhbegan-Shahid Abbaspoor 028-33665275
2	Marzieh Sadeghi	M. SC	Network engineer	Computer Coach	Technical and Vocational Training Organization	Charmal & Bakhtiari Blvd:enghelab 09131815420
3	Davood sadeghi	M. SC	Software engineer	Network expert	Shahrekord Unit Azad University	Charmal & Bakhtiari Blvd:enghelab 09131012348
4	Fahimeh Azad Shahra ki	M. SC	Software engineer	Lecturer	Shahrekord Sama Unit Azad University	Charmal & Bakhtiari 09103977114

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 whether 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 ASP.NET MVC 4 Web Applications****Competency Description:**

In this course, students will learn to develop advanced ASP.NET MVC applications using .NET Framework 4.5 tools and technologies. The focus will be on coding activities that enhance the performance and scalability of the Web site application. ASP.NET MVC will be introduced and compared with Web Forms so that students know when each should/could be used.

This course is intended for professional web developers who use Microsoft Visual Studio in an individual-based or team-based, small-sized to large development environment. Candidates for this course are interested in developing advanced web applications and want to manage the rendered HTML comprehensively. They want to create websites that separate the user interface, data access, and application logic.

After completing this course, students will be able to:

- Describe the Microsoft Web Technologies stack and select an appropriate technology to use to develop any given application.
- Design the architecture and implementation of a web application that will meet a set of functional requirements, user interface requirements, and address business models.
- Create MVC Models and write code that implements business logic within Model methods, properties, and events.
- Add Controllers to an MVC Application to manage user interaction, update models, and select and return Views.
- Create Views in an MVC application that display and edit data and interact with Models and Controllers.
- Run unit tests and debugging tools against a web application in Visual Studio 2012 and configure an application for troubleshooting.
- Develop a web application that uses the ASP.NET routing engine to present friendly URLs and a logical navigation hierarchy to users.
- Implement a consistent look and feel, including corporate branding, across an entire MVC web application.
- Use partial page updates and caching to reduce the network bandwidth used by an application and accelerate responses to user requests.
- Write JavaScript code that runs on the client-side and utilizes the jQuery script library to optimize the responsiveness of an MVC web application.
- Implement a complete membership system in an MVC 4 web application.
- Build an MVC application that resists malicious attacks and persists information about users and preferences.
- Describe how to write a Windows Azure web service and call it from an MVC application.
- Describe what a Web API is and why developers might add a Web API to an application.
- Modify the way browser requests are handled by an MVC application.
- Describe how to package and deploy an ASP.NET MVC 4 web application from a development computer to a web server for staging or production.

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:

A minimum of two to three years of experience developing web-based applications by using Microsoft Visual Studio and Microsoft ASP.NET, proficiency in using the .NET Framework, and some familiarity with the C# language.

Course duration:

Course Duration: 50 Hours

-Theoretical:10 Hours

-Practical:30 Hours

-Apprenticeship: 0 Hours

-Project:10 Hours

Course Evaluation :(%)

Exam 70-486



Published:October 4, 2012

Languages:English, Chinese (Simplified),
French, German, Japanese, Portuguese
(Brazil)

Audiences: [Developers](#)

Technology:Microsoft Visual Studio 2013,
ASP.NET MVC 5.1

Credit toward certification:MCP, MCSD

IRANTVTO Evaluation :(%)

Written Examination:25%

Practical Examination:65%

Ethics:10%

Required Qualifications for Trainers

Developing ASP.NET MVC 4 Web Applications degree holders with 5 years experiences

competency training standard**tasks**

	Title
1	Exploring ASP.NET MVC4
2	Designing ASP.NET MVC 4 Web Applications
3	Developing ASP.NET MVC 4 Models
4	Developing ASP.NET MVC 4 Controllers
5	Developing ASP.NET MVC 4 Views
6	Testing and Debugging ASP.NET MVC 4 Web Applications
7	Structuring ASP.NET MVC 4 Web Applications
8	Applying Styles to ASP.NET MVC 4 Web Applications
9	Building Responsive Pages in ASP.NET MVC 4 Web Applications
10	Using JavaScript and jQuery for Responsive MVC 4 Web Applications
11	Controlling Access to ASP.NET MVC 4 Web Applications
12	Building a Resilient ASP.NET MVC 4 Web Application
13	Using Windows Azure Web Services in ASP.NET MVC 4 Web Applications
14	Implementing Web APIs in ASP.NET MVC 4 Web Applications
15	Handling Requests in ASP.NET MVC 4 Web Applications
16	Deploying ASP.NET MVC 4 Web Applications

Training standard

Contents analysis form

Title: Exploring ASP.NET MVC4	time			
	theoretical	practical	total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipments ,tools, materials ,books
Knowledge and Skill: -Overview of Microsoft Web Technologies -Overview of ASP.NET 4.5 -Introduction to ASP.NET MVC 4 -Exploring a Photo Sharing Application -Exploring a Web Pages Application -Exploring a Web Forms Application -Exploring an MVC Application	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: Designing ASP.NET MVC 4 Web Applications	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipments ,tools, materials ,books
Knowledge and Skill: -Planning in the Project Design Phase -Designing Models, Controllers, and Views -Planning Models -Planning Controllers -Planning Views -Architecting an MVC Application	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: Developing ASP.NET MVC 4 Models	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
Knowledge and Skill: - Creating MVC Models - Creating an MVC Project and Adding a Model - Creating a New SQL Azure Database in Visual Studio - Adding Properties and Methods to MVC Models - Using Display and Edit Annotations in MVC Models	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: Developing ASP.NET MVC 4 Controllers	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
Knowledge and Skill: - Writing Controllers and Actions - Writing Action Filters - Adding an MVC Controller and Writing the Actions - Writing the Action Filters in a Controller - Using the Photo Controller	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: Developing ASP.NET MVC 4 Views	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
Knowledge and Skill: - Creating Views with Razor Syntax - Using HTML Helpers - Reusing Code in Views - Adding a View for Photo Display -Adding a View for New Photos -Creating and Using a Partial View - Adding a Home View and Testing the Views	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: Testing and Debugging ASP.NET MVC 4 Web Applications	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
Knowledge and Skill: - Unit Testing MVC Components - Implementing an Exception Handling Strategy - Performing Unit Tests - Configuring Exception Handling	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: Structuring ASP.NET MVC 4 Web Applications	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
Knowledge and Skill: - Analyzing Information Architecture - Configuring Routes - Creating a Navigation Structure - Using the Routing Engine - Building Navigation Controls	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: Applying Styles to ASP.NET MVC 4 Web Applications	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
Knowledge and Skill: - Using Template Views - Applying CSS to an MVC Application - Creating an Adaptive User Interface - Using Template Views - Applying a Consistent Look and Feel to an MVC Application - Adapting Web Pages for Different Browsers	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: Building Responsive Pages in ASP.NET MVC 4 Web Applications	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
Knowledge and Skill: - Using AJAX and Partial Page Updates - Implementing a Caching Strategy - Using Partial Page Updates - Configuring the ASP.NET Caches	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: Using JavaScript and jQuery for Responsive MVC 4 Web Applications	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
Knowledge and Skill: - Rendering and Executing JavaScript Code - Using jQuery and jQueryUI - Using jQuery to Respond to Users - Using jQueryUI to Build a User Interface	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: Controlling Access to ASP.NET MVC 4 Web Applications	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
Knowledge and Skill: - Implementing Authentication and Authorization - Assigning Roles and Membership - Configuring Authentication and Membership Providers - Building the Logon and Register Views - Authorizing Access to Resources - Building a Password Reset View	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: Building a Resilient ASP.NET MVC 4 Web Application	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
Knowledge and Skill: - Developing Secure Sites - State Management - Storing User Preferences - Using User Preferences in the Photo Gallery	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: Using Windows Azure Web Services in ASP.NET MVC 4 Web Applications	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
Knowledge and Skill: - Introducing Windows Azure - Designing and Writing Windows Azure Services - Consuming Windows Azure Services in a Web Application - Creating and Coding a Windows Azure Service - Consuming Data from a Windows Azure Service	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: Implementing Web APIs in ASP.NET MVC 4 Web Applications	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
Knowledge and Skill: - Developing a Web API - Calling a Web API from Mobile and Web Applications - Developing a Web API in MVC 4 - Adding Routes and Controllers to Handle REST Requests - Call RESTful services from Client-Side Code	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: Handling Requests in ASP.NET MVC 4 Web Applications	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
Knowledge and Skill: - Using HTTP Modules and HTTP Handlers - Using Web Sockets - Writing a Web Handler that Uses Web Sockets - Building a Chat Room in The Photo Sharing Application	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: Deploying ASP.NET MVC 4 Web Application	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
Knowledge and Skill: - Deploying a Web Application - Deploying an MVC 4 Application - Deploying an Application to Windows Azure - Test the Completed Application	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				

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

*Required quantity for each 15 Trainees

From: Microsoft