

معاونت پژوهش، برنامه‌ریزی و سنجش مهارت

دفتر پژوهش، طرح و برنامه‌ریزی درسی

# استاندارد آموزش شایستگی

## Advanced Web Application Development using Microsoft® ASP.NET

### گروه شغلی

### فناوری اطلاعات

کد ملی آموزش شایستگی

۲	۵	۱	۳	۴	۰	۵	۳	۰	۲	۲	۰	۰	۱	۱
ISCO-۰۸				سطح مهارت	شناسه گروه			شناسه شغل			شناسه شایستگی		نسخه	

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Ministry of cooperatives  
Labour and Social Welfare



Iran Technical and Vocational  
Training Organization

Deputy of training  
Plan and curriculums office

# Competency Training standard

## **Title**

*Advanced Web Application  
Development using Microsoft®  
ASP.NET*

## **Occupational group**

**Information Technology (IT)**

**International code**

2513-53-119-1

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Control of board on content compilation and accreditation: Plan and curriculums office  
National code: 2513-53-119-1

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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 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:****Advanced Web Application Development using Microsoft® ASP.NET****competency description:**

This course provides students with the knowledge and skills that are needed to successfully design and implement Web applications using Microsoft ASP.NET. This course assumes student exposure to the new features of ASP.NET that can be leveraged for Web applications matching corporate requirements.

After completing this course, students will be able to:

- Create a Web application architecture that is maintainable and extensible.
- Describe the elements of a well-designed portal application using ASP.NET.
- Implement best practices for creating data access logic components.
- Create a well-designed data abstraction layer to maximize code reusability.
- Tune data-driven Web applications for optimal performance.
- Customize databinding for maximum scalability and usability.
- Design and implement an easy-to-administer configuration strategy.
- Generate custom configuration handlers.
- Create custom controls to encapsulate user interface.
- Use best practices for interoperating with COM components.
- Implement caching techniques to improve Web application performance.
- Design reusable Web presentation patterns using object-oriented techniques.
- Use GDI+ classes to create interactive graphics.
- Use DataGrids for advanced reporting techniques.
- Apply best practices for debugging and exception handling.
- Use Application Center Test for stress testing Web applications.
- Create a flexible security infrastructure.
- Implement encryption classes to secure communication.
- Build an administrative interface for a portal application.
- Use object-oriented techniques to build an extensible modular design.

**admission requirements:**

minimum degree of education: Post first year of high school

minimum physical and mental ability: Complete physical and mental health

prerequisite skills: Hypertext Markup Language (HTML), client-side and server-side scripting, ASP.NET, Microsoft ActiveX Data Objects for .NET (ADO.NET), and a Microsoft .NET-based programming language

**Course duration:**

Course duration: 60 hours

**Course Evaluation :(%)**

[Exam 70-305](#): Developing and Implementing Web Applications with Microsoft Visual Basic .NET and Microsoft Visual Studio .NET

[Exam 70-315](#): Developing and Implementing Web Applications with Microsoft Visual C# .NET and Microsoft Visual Studio .NET

Course Materials

**IRANTVTO Evaluation :(%)**

Written Examination:25%

Practical Examination:65%

Ethics:10%

Advanced Web Application Development using Microsoft® ASP.NET degree holders with 4 years experiences

**competency training standard**

**tasks**

	<b>Title</b>
1	Considerations for Building Advanced ASP.NET Applications
2	Designing Data Tier Components
3	Web Presentation Patterns
4	Building Custom Controls
5	Using Graphics Classes to Generate Images
6	Creating a Secure Infrastructure
7	Caching Patterns and Practices
8	Diagnostics and Exception Handling
9	Interoperability with COM
10	ASP.NET Configuration
11	Administering and Extending the Portal



Training standard

Contents analysis form

<b>Title:</b> Considerations for Building Advanced ASP.NET Applications	time			
	theoretical	practical	total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipments ,tools, materials ,books
<b>Knowledge and Skill:</b> -Building Enterprise Web Applications With ASP.NET -Presentation Layer -Data Access Layer -Business Logic Layer -Examining the Structure of the Applications -Building Utility Controls	Determined by the instructor			<b>From Microsoft</b>
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

<b>Title:</b> Designing Data Tier Components	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipments ,tools, materials ,books
<b>Knowledge and Skill:</b> -Implementing Data Access Logic Components -Designing a Data Abstraction Layer -Performance Tuning for Data Access -Managing Settings and Configuration with Typed DataSets -Best Practices for Reliable Data Access -Using Data Access Components for Databinding -Creating Collection Classes for Data Display	Determined by the instructor			<b>From Microsoft</b>
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

<b>Title:</b> Web Presentation Patterns	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
<b>Knowledge and Skill:</b> -Using Design Patterns in Web Applications -Creating Dynamic Interfaces with User Controls -Using Inheritance to Define Basic Site Functionality -Using Collection Classes for DataBinding -Properties and Elements of the DataGrid -Optimal Data Paging for DataGrids -DataGrid Editing Techniques -Creating Master/Detail Views with a DataGrid -Implementing the Defect Class -Implementing the Defect Module -Creating a Master/Detail Report	Determined by the instructor			<b>From Microsoft</b>
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

<b>Title:</b> Building Custom Controls	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
<b>Knowledge and Skill:</b> -Architecture of Custom Controls -Creating Control Object Models -Using Events in Controls -Rendering Control Output -Creating Data-Bound Custom Controls -Identifying Parts of a Data-Bound Custom Control -Implementing a Data-Bound Custom Control -Using a Data-Bound Custom Control	Determined by the instructor			<b>From Microsoft</b>
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

<b>Title:</b> Using Graphics Classes to Generate Images	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
<b>Knowledge and Skill:</b> -Major System.Drawing Classes -Methods for Generating Images -Using Data to Generate Charts Lab : Generating Data-Driven Graphics -Creating a Graphics object -Stream the image to the browser	Determined by the instructor			<b>From Microsoft</b>
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

<b>Title:</b> Creating a Secure Infrastructure	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
<b>Knowledge and Skill:</b> -ASP.NET Security Models -Role-based Authorization Techniques -Process Identity and Accessing Resources -Securing Communication with Encryption -Implementing the ICustomPrincipal Interface -Creating Security Classes Customized - Authentication Process -Identifying User Roles	Determined by the instructor			<b>From Microsoft</b>
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

<b>Title:</b> Caching Patterns and Practices	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
<b>Knowledge and Skill:</b> -Effective Caching Strategies -Managing Session Data -Client-side Caching Options -Caching Site Configuration -Caching Dynamic Controls	Determined by the instructor			<b>From Microsoft</b>
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

<b>Title:</b> Diagnostics and Exception Handling	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
<b>Knowledge and Skill:</b> -Exception Handling Strategies -Best Practices for Debugging -Using Application Center Test for Performance Testing -Applying Performance Counters to Profile Web Applications -Implementing an Exception Handling Framework -Creating and Handling a Custom - Exception Testing Web Applications with Application Center Test -Using Application Center Test to Find Web Server Capacity	Determined by the instructor			<b>From Microsoft</b>
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

<b>Title:</b> Interoperability with COM	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
<b>Knowledge and Skill:</b> -Overview of COM Interop -Creating and using a Runtime Callable Wrapper -Guidelines and Issues in COM Interoperation -Referencing a COM component from an ASP.NET application	Determined by the instructor			<b>From Microsoft</b>
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

<b>Title:</b> ASP.NET Configuration	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
<b>Knowledge and Skill:</b> -Configuration Schema Overview -Examples of Built-in Configuration Settings -Creating Custom Configuration Settings -Encrypting Configuration Settings -Using the Configuration Management Application Block -Creating and Reading Custom Configuration Settings -Working with Encrypted Configuration Sections -Using Microsoft Configuration Management Application Block	Determined by the instructor			<b>From Microsoft</b>
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

<b>Title:</b> Administering and Extending the Portal	Time			
	theoretical	practical	Total	
	Determined by the instructor			
Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipment's ,tools, materials ,books
<b>Knowledge and Skill:</b> -Creating Flexible Site Administration Tools -Adding Modules to the Portal -Extending the Data Layer -Creating the User Control and Edit Page	Determined by the instructor			<b>From Microsoft</b>
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**