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**Course #:** ITMD 563

**Course Title:**

Intermediate Web Application Development

**Course Description:**

In-depth examination of the concepts involved in the development of Internet applications. Students will learn the differences and similarities between Internet applications and traditional client/server applications. A discussion of the technologies involved in creating these Internet applications is included, and students will learn to use these technologies to create robust server-side applications.

**Course Outcome:**

In this course we will learn the fundamentals of the .Net framework, gaining a deeper understanding of web application standards, tools and techniques. Leverage Visual Studio Integrated Development Environment to build web application projects and deploy them. Students will learn to use the cloud infrastructure to manage the application life cycle and deploy their solution to Microsoft Azure cloud. We will introduce the modern web application and work with standards like HTML 5, CSS and use popular tools like bootstrap to build the web applications.

**Course Objectives:**

Use the .NET framework to build web applications (including ASP.NET, ASP.NET Standard/ASP.NET Core)

Work with various web application project types (Web Forms, MVC)

Build an end to end web application using Visual Studio Integrated Development Environment and Visual Studio Code

Use Cloud to build and deploy web applications on Microsoft Azure

**Graduate Student Requirements**

* All projects will be in version control (Visual Studio Online or Git)
* All projects when possible will include unit test projects with unit testing for the application
* All applications will have code analysis (From the Visual Studio Menu select Build>Run Code Analysis on <project name) run of them and addresses issues from the code analysis
* All types of IO (file, network, web, database …) will be wrapped in exception handling code
* After running Code Analyses all assignment have a maintainability index of great than 75%
* All recommendations from Microsoft Code Analysis should be implemented (**https://marketplace.visualstudio.com/items?itemName=VisualStudioPlatformTeam.MicrosoftCodeAnalysis2017)**

**Requirements:**

Familiarity with Object oriented programming, prior experience with a programming language Java / C# / VB

**Resources:**

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| **Status** | **Author(s)** | **Title** | **Publisher** | **Date** |
| Required (and free) | Michael S. Collier and Robin E. Shahan | Microsoft Azure Essentials: Fundamentals of Azure  <http://aka.ms/697225pdf> | Microsoft Press | 2015 |
| Required (and free) | Scott Guthrie, Mark Simms, Tom Dykstra, Rick Anderson, and Mike Wasson | Building Cloud Apps with Microsoft Azure  <http://aka.ms/CloudApps_PDF> | Microsoft Press | 2014 |

**Evaluation:**

Five Assignments, Project (Graduate Projects with a bigger scope)

Five Assignments each 60%; Project 30%, engagement 10%;

The grade scheme is same for both graduate and undergraduate students except the scope of project for Graduate students will have additional tasks and requirements.

**Course Schedule (subject to extensive change)**

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| Week | Topic | Required Reading |
| Week 1 | Introduction to .Net framework; Getting ready fo[r](http://msdn.microsoft.com/en-us/library/zw4w595w(v=vs.110).aspx) the course – Installing Visual Studio Ultimate, Setting up Visual Studio Online account, Subscription to Azure, Familiarize with Visual Studio 2017 Update 7 IDE, Walk through a simple web project from end to end with source control and Azure Deployment | * What is the .NET Framework? <https://docs.microsoft.com/en-us/dotnet/framework/get-started/overview> * Tell me about Visual Studio - <http://www.visualstudio.com/en>[-us](http://www.visualstudio.com/en-us) * What is Azure? <https://azure.microsoft.com/en-us/overview> * An introduction to C# - <https://docs.microsoft.com/en-us/dotnet/csharp/getting-started/introduction-to-the-csharp-language-and-the-net-framework> |
| Week 2 & 3 | Anatomy of a web application; ASP.NET application and Page cycle; Tools to monitor web application (Fiddler, Developer tools); Web Application – The basics: HTML 5, CSS, JavaScript; Building a simple web application with HTML 5 and CSS; Using Bootstrap for theme and styling; Web application architecture – Presentation, Business Logic, Data Access | IIS Overview <https://www.iis.net/overview>  ASP.NET Page Overview - <https://msdn.microsoft.com/en-us/library/ms178472.aspx>  Designing Web Application <https://msdn.microsoft.com/en-us/library/ee658099.aspx>  Yeah, BootStrap http://getbootstrap.com/; |
| Week 3 & 4 | Introduction to C#; overview of Web Application Project Types; overview of Authentication; one ASP.NET; Web Servers (IIS, Local, External, Custom);Building a Web Form Application; using Server Controls | * C# tutorials -http://msdn.microsoft.com/enus/library/aa288436%28v=vs.71%29.aspx * What are web-forms? <http://www.asp.net/web-forms/what-is-webforms> * ASP.NET Blog Engine - http://blogengine.codeplex.com/documentati on * Web-Forms getting started - <https://docs.microsoft.com/en-us/aspnet/web-forms/overview/getting-started/> |
| Week 5 & 6 | Building a Data Driven Web Forms Application with Visual Studio 2013 and Deploying it to the cloud | * Entity Framework Code First - <http://msdn.microsoft.com/enus/data/jj200620> * Azure Storage Explorer <https://azure.microsoft.com/en-us/features/storage-explorer/> |
| Week 7, 8 & 9 | Introduction to MVC; Building data driven MVC application with Entity Frame work | * Application Insights - <https://azure.microsoft.com/en-us/services/application-insights/> * Application Insights for ASP.NET Core - <https://docs.microsoft.com/en-us/azure/application-insights/app-insights-asp-net-core> * Introduction to ASP.NET MVC -http://www.microsoftvirtualacademy.com/training-courses/introduction-to-asp-net-mvc |
| Week 10 & 11 | Web API, Azure API App, and Signal R (real-time web) | * Basic Web API Info - <https://www.asp.net/web-api> * Azure API App - <https://azure.microsoft.com/en-us/services/app-service/api/> * Signal R - <https://www.asp.net/signalr> |
| Week 12 & 13 | Introduction to HTML 5, CSS and JavaScript application | <http://www.asp.net/visualstudio/overview/2013/visual-studio-2013-webeditor-features-javascript>;   * Azure Web Jobs - <https://docs.microsoft.com/en-us/azure/app-service-web/web-sites-create-web-jobs> * Azure Functions * <https://azure.microsoft.com/en-us/services/functions> * Overview- <https://docs.microsoft.com/en-us/azure/azure-functions/functions-overview> * Developer overview <https://docs.microsoft.com/en-us/azure/azure-functions/functions-overview> * Develop and test local <https://docs.microsoft.com/en-us/azure/azure-functions/functions-develop-vs> * Azure Logic Apps * <https://docs.microsoft.com/en-us/azure/logic-apps/logic-apps-what-are-logic-apps> * <https://docs.microsoft.com/en-us/azure/logic-apps/logic-apps-examples-and-scenarios> |
| Week 14 & 15 | Introduction to Mobile Application Development | http://azure.microsoft.com/enus/documentation/articles/web-sites-dotnetdeploy-aspnet-mvc-mobile-app/ |
| Other topics | Application insights  Azure Web Jobs  Azure Functions  Logic Apps  Azure Log Analytics  ASP.NET Core |  |

**The session on xx/xx will be a recording.**

Examinations:

2 Quizzes, 5 Assignments and a Project; Graduate student projects will have additional requirements

Code of Academic Honesty:

IIT expects students to maintain high standards of academic integrity. Students preparing for the practice of a profession are expected to conform to a code of integrity and ethical standards commensurate with the high expectations society places on practitioners of a learned profession. No student may seek to gain an unfair advantage over another. The Code of Academic Honesty is explained in the IIT Student Handbook and all students are expected to know and adhere to this code.

Plagiarism:

All work you submit in this course must be your own. You must fully attribute all material directly quoted in papers and you must document all sources used in the preparation of the paper using complete, APA-style bibliographic entries. No more than thirty-three percent of material included in any paper may be direct quotes. If you submit plagiarized material you can expect to receive a grade of ZERO for the assignment, an Academic Honesty Violation Report will be filed, and it may result in your expulsion from the course with a failing grade as per the IIT and ITM academic honesty policies.

Disabilities:

Reasonable accommodations will be made for students with documented disabilities. In order to receive accommodations, students must obtain a letter of accommodation from the Center for Disability Resources and make an appointment to speak with me as soon as possible. My office hours are listed on the first page of the syllabus. The Center for Disability Resources (CDR) is located in 3424 S. State St., room 1C3-2 (on the first floor), telephone 312 567.5744 or disabilities@iit.edu.