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# Abstract

This course is an introduction to web-based software engineering environments, design patterns, frameworks and key architectural aspects of robust enterprise applications. Topics for software development technologies include development languages and frameworks (e.g., .NET,  Java, open-source), various tools used during the development lifecycle, and key components of an application in terms of the data, process and presentation layers.

The emphasis is on hands-on software development in JavaScript, jQuery, C# and other programming languages in modern software engineering environments.

This is a hand’s on application development course that introduces the latest web technologies, methodologies, libraries, and program languages used in open source and commercial applications - today. The purpose of this course is to actively engage the students by helping them to work on projects and assignments.  The course is divided into four modules.

# Prerequisites

* ISEM-501 and ISEM-530
* Or strong web development background

# **Module 1**

## Intro to Version Control Systems (VCS)

### Module Info

* 1 to 2 weeks duration

### Module Content

* Centralized VCS
* Distributed VCS

### Module Goals

* Get familiarized with VCS in general
* Understand the differences between centralized and distributed VCS
  + Understand the benefits of distributed VCS over centralized
* Become comfortable and proficient with Git
* Create accounts and become familiar with GitHub and Bitbucket

### Module Resources

* Abundant online resources
* <http://git-scm.com/>

# **Module 2**

## Intro to Web Technologies

### Module Info

* 1-2 weeks duration

### Module Content

* Web technologies (HTML, CSS, JavaScript, JSON, etc)
* JavaScript libraries
* Bootstrap (and other CSS libraries)

### Assignments

* Assignment 2: Simple HTML and JavaScript application
  + Free to use any libraries
  + The purpose of this assignment is to get a baseline of where the students are at

### Module Resources

* <http://git-scm.com/>

# **Module 3**

### Module Info

* 3-4 weeks duration

### Module Goals

* Become proficient with HTML, JavaScript, and CSS

TODO: Add quiz here

# **Module 4**

## Intro to .NET Web Technologies

### Module Info

* 6-7 weeks duration

### Module Content

* C# language
* NuGet package manager
* Visual Studio
  + Project templates
* Design patterns and libraries
  + Ninject
* MVC
* WebAPI
* Entity Framework

### Module Goals

* Gain an understanding of commonly used .NET technologies
* Learn how to use common .NET tools (NuGet, VS, etc)

### Assignments

* Assignment 6: Create C# console app using dependency injection
  + Ninject library (makes use of VS, NuGet, etc)
* Assignment 7: Create .NET services using Web API
* Assignment 8: Connect web services to database using Entity Framework
* Assignment 9: Point project from assignment 4, to the .NET services

### Module Resources

* <http://www.asp.net/web-api/overview/data/using-web-api-with-entity-framework/part-1>

### GRADING AND ASSIGNMENTS

Your grade is based on 100 possible points. You earn points with each assignment and exam (see below).

**A:** 93 to 100; **A-:** 90 to 92; **B+:** 87 to 89; **B:** 83 to 86; **B-:** 80 to 82; **C+:** 77 to 79; **C:** 73 to 76; **F:** 0 to 72.

#### Plagiarism and Cheating Policy (very Important)

HU is rigorously discouraging the practice of plagiarism and enforcing the following policy:

* First incident of plagiarism, a grade of 0 on the assignment and a stern warning
* Second incident of plagiarism, a grade of 0 on the assignment and a stern warning with possibility of F in the entire course (an instructor has the right to assign a grade of F in the entire course due to flagrant disregard of the first warning)
* Third incident of plagiarism, a grade of F in the entire course.

The policy against cheating (e.g., copying another student’s work) is similar.

Please note that a Grade of F in a course may result in cancellation of CPT and student visa.

#### HU CORE COMPETENCIES

At the conclusion of this course a student will have met the following core competencies that reflect HU's mission:

* Critical Thinking and Problem Solving skills are demonstrated by the student’s ability to:  
  - Identify and clarify the problem**,**  
  - Gather information,  
  - Evaluate the evidence,  
  - Consider alternative solutions,  
  - Choose and implement the best alternative.
* Communication - The core communication skills are demonstrated by the student’s ability to:  
  - Express ideas and facts to others effectively in a variety of formats, particularly written, oral, and visual formats,  
  - Communicate effectively by making use of information resources and technology.
* Teamwork and Collaboration - The students will be working with others to increase involvement in learning and by sharing one's own ideas and responding to others' reactions to sharpen thinking and deepen understanding.

#### STATEMENT ON ACADEMIC INTEGRITY

According to the University's Student Handbook: Academic integrity is the pursuit of scholarly activity free from fraud and deception, and is the educational objective of this institution. Academic dishonesty includes, but is not limited to cheating, plagiarism, fabrication of information or citations, facilitating acts of academic dishonesty by others, unauthorized possession of examinations, submitting work of another person, or work previously used without informing the instructor, or tampering with the academic work of other students. Any violation of academic integrity will be thoroughly investigated, and where warranted, punitive action will be taken.

Students should be aware that standards for documentation and intellectual contribution may depend on the course content and method of teaching, and should consult the instructor for guidance in this area.

***Honor Code -*** We as members of Harrisburg University community pledge not to cheat, plagiarize, steal, or lie in matters related to academic work. As a Community of Learners, we honor and uphold the ***HU Honor Code***.

#### COURSE CONDUCT

A few rules will help us to get the most of our classes:

* + Classes will start on time and end as scheduled. Please take your seat prior to the start of class.
  + You have a 15 minute timeframe to come in the class at the beginning of the class. When there is a break the window will be 5 minutes. After this window you will have to wait outside until there is a break. If you have a valid reason (for example a flight delay), there will be no deduction for participation, otherwise being absent during the in class sections will affect your grade in a big way. Possible quizzes or tests will not be offered a 2nd time, if you miss that quiz, you will not be able to make up for it. It is also your responsibility to make sure you get all the material that is covered in the class and that you know any possible assignments that I may give out during class.

An example: If class starts at 8:00, you’re welcome to join the class till 8:15. If later, you stay out of the class until the break. When it is break from 10:00 till 10:15, you’re welcome to join the class until 10:20. If not you stay out of the class until the end of the class.

* + No cellphones nor tablets nor computers in class. If the computer is needed, this will be told by the instructor.
  + You will attend each class and actively participate in the discussions during class. If you are uncomfortable with public speaking, or if English is not your native language, please talk to the instructor in the first two weeks of the course to establish ways to make you more comfortable in speaking and interacting with other students (your peers).
  + For every hour of class time, I anticipate that you will need to budget about 3 hours of out-of-class time. This implies that you need to budget about 120 hours of out-of-class time over the course of the semester. This time estimate is a guide and ***you may need to budget more***. For example, if the material is new to you or difficult to comprehend, it will require more of your time.
  + ***You are responsible for all the readings***, even if the material is not explicitly covered in class. You should read the class materials prior to class and be prepared to discuss and ask questions about the readings and quiz materials. You should also re-read the material after class as not every topic will be covered during class time. Many passages in the text may need to be read several times to gain clarity. Also, taking notes on the material you are reading and reflecting on the reading and these notes will help you better understand the issues, concepts and techniques that are being presented.
  + All work must be completed and turned in on or before the assigned date. ***No late work will be accepted***. Late means after the class has begun. Note that a computer's failure is not an excuse (it represents poor planning on your part).
  + All work must be done using a word processor. Carefully proofread your work since mistakes which include spelling errors, grammatical errors, and typos will affect your grade.
  + Your work should be properly referenced and adhere to standards of both academic integrity and proper form. Generally, I prefer the APA style (see <http://www.apa.org/>).
  + All class credit-related electronic mail must be done using Harrisburg's electronic mail service and the student's assigned Harrisburg University ID. Students are welcome to use Yahoo mail, Hotmail or any other service for their private non-class-related use. By 'credit-related' I mean all work to be evaluated for credit. Any work submitted through a different mail system will not be accepted.
  + When individual work is assigned it should be done by you, alone.

Students who participate in University-sanctioned events must make prior arrangements and give the instructor ample notice as missing class is not advised.  
 ***NOTE: If you use a friend's computer - be sure to change the identity information so that the work comes through YOUR account! Work will not be accepted if it does not come from the student's Harrisburg University account***

#### Extreme Event Contingency

In the event of an extreme event (weather, power, etc.) that would cause the official closing of the University and normally result in the cancellation of classes, the instructor may choose to move class activities to online.  Check the Moodle course page for specific directions on when and how to participate in class during extreme events.

Online, synchronous courses will be held regardless of extreme events, unless the event interrupts electricity for the instructor or a majority of students.  Check the Moodle course page for specific directions on how to participate in an online, synchronous class during extreme events.

Online, asynchronous courses are not impacted by extreme events unless otherwise indicated by the instructor.