Department of Applied Information Technology

The Volgenau School of Information Technology & Engineering

IT 431 Web II: Advanced Web Development

Course Description

Introduces students to database-driven Web application design and development, and Web presentation using server-side coding and advanced techniques. Additional topics include LINQ, AJAX, and Web services.

Prerequisites

The prerequisite for this course is **IT 331** (or an approved equivalent course). A grade of "C" or better **must** be achieved in the prerequisite course **before** a student is qualified to take this course. The prerequisite course must be completed prior to, not on currently with, this course.

This requirement will be **strictly enforced**. Any student who does not meet the prerequisite requirement will be dropped from the course by the Instructor at the start of the semester and the student will be responsible for any consequences of being dropped.

Rational

Rapid development of websites in today's world is a must. Further, with the advent of Web 2.0, the focus has shifted from presentation to collaboration.

Sites such as YouTube and Facebook make their very existence based on collaboration between their users. The web is changing quickly and in such environment, it is important to learn how to develop and manage advanced content and sites quickly and efficiently.

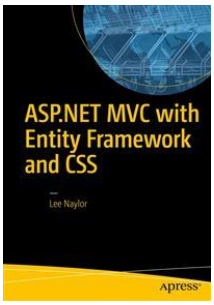
In this course, the focus will be primarily on Microsoft's ASP.NET technologies, a collection of frameworks, development tools, and programming languages designed to allow for fast and consistent development of advanced websites.

Objectives

We will also look at web servers in general and delve a bit into client-side technologies such as Ajax.
On successful completion of this course, students will:

- Understand a web server's functionality
- Create web applications using ASP.NET MVC 5
- Create a web application that is responsive
- Use a CSS Framework such as Bootstrap.
- Validate user input on a web page
- Create a database and retrieve data using advanced techniques
- Use Entity Framework to access and query a relational database
- Understand Language Integrated Query (LINQ)
- Understand Performance and Security considerations when designing a web application.
- Use WebAPI to create a Representational State Transfer (REST) service
- Pushing content to a web application using SignalR

Textbook



ASP.NET MVC with Entity Framework and CSS

Lee Naylor;

ISBN-13: 978-1-4842-2136-5

Publisher's URL

An electronic version of the textbook, provided by Safari® Tech Books Online, is accessible through the university library website ***free of charge.***

Please note: Download the course exercise and example material from the publisher's website.

Equipment

Laptop or Notebook with Visual Studio 2017, SQL server express that is installed with Visual Studio, IS express that is installed with Visual studio.

One USB disc drive (not using power) to copy class files. 16Gb is preferred.

Faculty

Name: **Randy Michak**
Email Address: **rmichak@gmu.edu**
Office Hours: **By appointment**

Teaching Assistant

Abhishek Mishra (amisra4@masonlive.gmu.edu)

Administrative support

Fairfax Campus
Nguyen Engineering Building, Room 5400
Phone: 703-993-3565

Science and Technology Campus
Bull Run Hall, Suite 102
Phone: 703-993-8461

For a map and directions, visit: http://maps-directions.gmu.edu

Grading

Grades will be awarded in accordance with the Mason Grading System for undergraduate students.
See http://www.gmu.edu/catalog/apolicies/ under Grading System for more information.

The grading scale for this course is:

97	–	100%	A+	Passing
93	–	96%	A	Passing
90	–	92%	A-	Passing
87	–	89%	B+	Passing
83	–	86%	B	Passing
80	–	82%	B-	Passing
77	–	79%	C+	Passing
73	–	76%	C	Passing
70	–	72%	C-	Passing*
60	–	69%	D	Passing*
0	–	59%	F	**Failing**

* Grades of "C-" and "D" are considered passing grades for undergraduate courses. However, a minimum grade of "C" is required in the BSIT program for any course that is a

prerequisite for one or more other courses. This course is a prerequisite for several courses in BSIT Concentrations – see http://www.gmu.edu/catalog/courses/it.html for more information on those courses.

Projects

Case Study	10%
Project I	20%
Project II	30%
Project III	40%

Each student will individually design, build and submit two projects (Projects I and II) and one group project (Project III) in accordance with requirements to be discussed in class.

Late projects may not be accepted – if accepted, a penalty may be applied. Final grades will be posted to PatriotWeb, which is the only vehicle for students to obtain those grades.

A student with a "hold" on his/her PatriotWeb account will be unable to access final grades until the hold has been removed by the Registrar.

In-class exercises

There will be one case study that will be completed during class hours. Students will have to follow the Instructor as they work on small increments of that case study during lecture hours. Concepts learned / practiced during these class hours can be applied to assigned projects. Students will be required to submit final case study at the last lecture.

Homework

To complete projects additional research/lab work might be necessary. Homework may be assigned each week during the semester in the form of working on the chosen project. Additional lab work/time will be required to complete Projects I, II, and III.

Schedule

This schedule is subject to revision before and throughout the course. Students should refer to the Blackboard system for the latest schedule.

Week	Content	Reading Assignment	Project
1	Course Introduction Review Web Development Concepts		
2	Introduction to ASP.NET MVC	Chapter 1	Assign Project I

3	Data-Driven Views and Controllers	Chapter 2	
4	Data Entry & Validation	Chapter 4	
5	Security	Chapter 7	
6	Searching, Filtering, Sorting & Paging	Chapters 3 & 5	
7	Caching & Performance		Project I Due Assign Project II
8	Server-Side Validations Error Handling		
9	Entity Framework Code First -Existing Database	Chapter 11	
10	Boostrap & Advanced CSS	Chapters 14-18	
11	WebAPI/RESTful Interfaces		Project II Due Assign Project III
12	SignalR (Pushing Content to Browser)		
13	Client-side Frameworks & SPAs		
14	Special Topics		Project III Due Case Study Due

Important Dates

Dates for adding, dropping the course, etc. are available via: http://registrar.gmu.edu.

Religious Holidays

A list of religious holidays is available on the University Life Calendar page. Any student whose religious observance conflicts with a scheduled course activity must contact the instructor **at least 2 weeks in advance** of the conflict date in order to make alternative arrangements.

Attendance Policy

Students are expected to attend each class, to complete any required preparatory work (including assigned reading) and to participate actively in lectures, discussions and exercises. As members of the academic community, all students are expected to contribute regardless of their proficiency with the subject matter. **The instructor reserves the right to issue pop quizzes if adequate attendance is not maintained.**

Students are expected to make prior arrangements with their instructor if they know in advance that they will miss any class and to consult with the instructor as soon as possible if they miss any class without prior notice.

Any student who expects to miss more than one class is strongly advised to drop the course and take it in a later semester when he/she can attend every class.

Departmental policy requires students to take exams at the scheduled time and place, unless there are truly compelling, severe circumstances supported by appropriate documentation. Except in such circumstances, failure to arrive to the exam site on time for a scheduled exam will result in a score of zero (0) for that exam, in accordance with Mason policy on final exams. Students should not make travel plans or other discretionary arrangements that conflict with scheduled classes and/or exams. If the University is closed due to weather or other unforeseen conditions, final exams may be rescheduled – students are strongly advised not to make plans that would prevent them from attending exams that may be rescheduled during the entire exam period.

Classroom Conduct

Whether the course is face-to-face or online, students are expected to conduct themselves in a manner that is conducive to learning, as directed by the instructor. Any student who negatively impacts the opportunity for other students to learn will be warned – if disruptive behavior continues, the student will be removed from the course.

Communications

Registered students will be given access to a section of the Blackboard Learning System for this course. Blackboard will used as the primary mechanism (outside of lectures) to disseminate course information, including announcements, lecture slides, assignments, and grades.

Communication with the instructor on issues relating to the individual student should be conducted using Blackboard Mail, GMU email, via telephone, or in person - not in the public forums on Blackboard. GMU Mail is the preferred method – for urgent messages, you should also attempt to contact the instructor via telephone. Federal privacy law and GMU policy require that any communication with a student related in any way to a student's status be conducted using secure GMU systems – if you use email to communicate with the instructor you **MUST** send messages from your GMU email account.

All course materials (lecture slides, assignment specifications, *etc.*) are published on Blackboard in Adobe® Portable Document Format (PDF) or in a format for which a free ***reader*** is available (such as Microsoft PowerPoint). This allows users of most computing platforms to view and print these files. Microsoft® Word (or a compatible word processing application) is required for preparing assignments – it is available on computers in the Mason open labs.

Privacy

Instructors respect and protect the privacy of information related to individual students. As described above, issues relating to an individual student will discussed via email, telephone or in person. Instructors will not discuss issues relating to an individual student with other students (or anyone without a need to know) without prior permission of the student.

Graded work other than exams will be returned to individual students directly by the instructor (or by a faculty or staff member or a teaching assistant designated by the instructor or via another secure method). Under no circumstances will a student's graded work be returned to another student.

Faculty and staff will take care to protect the privacy of each student's scores and grades.

Disability Accommodations

The Office of Disability Services (ODS) works with disabled students to arrange for appropriate accommodations to ensure equal access to university services. Any student with a disability of any kind is strongly encouraged to register with ODS as soon as possible and take advantage of the services offered.

Accommodations for disabled students must be made in advance – ODS cannot assist students retroactively, and at least one week's notice is required for special accommodations related to exams. Any student who needs accommodation should contact the instructor during the first week of the semester so the sufficient time is allowed to make arrangements.

Honor Code

All members of the Mason community are expected to uphold the principles of scholarly ethics. Similarly, graduating students are bound by the ethical requirements of the professional communities they join. The ethics requirements for some of the communities relevant to Applied IT graduates are available via the following links:

ACM Code of Ethics and Professional Conduct

IEEE Code of Ethics

EC-Council Code of Ethics

On admission to Mason, students agree to comply with the requirements of the GMU Honor System and Code[1]. The Honor Code will be strictly enforced in this course. Honor Code cases are heard by a panel consisting of students – students who meet the requirements are encouraged to nominate themselves to serve on the Honor Committee. Any use of the words or ideas of another person(s), without explicit attribution that clearly identifies the material used and its source in an appropriate manner, is **plagiarism** and will not be tolerated. The instructor will use several manual and automated means to detect cheating and/or plagiarism in any work submitted by students for this course, and to direct teaching assistants and/or other faculty and/or staff members to do likewise in support of this course.

WARNING! This course has a zero tolerance policy for violations of the Honor Code. There are no second chances. First offenses carry a minimum recommended sanction of: an assignment grade of 0, one letter grade (10%) reduction in the final grade, and a requirement to complete an academic integrity seminar. Second and third offenses (and egregious first offenses, as determined solely by the instructor/course coordinator) carry stiffer minimum recommended sanctions, including but not limited to: F in the course, academic suspension, and expulsion. Please do not even think about violating the Honor Code. There are many ways to receive help. You are strongly encouraged to use these methods if you are struggling, so that you can get the help you need. If you have any questions about what does/does not constitute an Honor Code violation, please contact your instructor.

Additional information on the enforcement of the George Mason University Honor Code policy can be found at: http://oai.gmu.edu.