SWE 642
Software Engineering for the World Wide Web

Fall Semester, 2017
Location: AB L008
Time: Tuesday 7:20-10:00pm

Professor:	**Dr. Vinod Dubey**
Email:	vdubey@gmu.edu
Class Hours:	Tuesday 7:20-10:00, AB L008
Prerequisite:	SWE 619 and SWE Foundation material or (CS 540 and 571)
Office Hours:	Anytime electronically, or by an appointment
Teaching Assistant:	Mr. Shravan Hyderabad, shyderab@masonlive.gmu.edu

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Overview

OBJECTIVE:

After completing the course, students will understand the concepts and have the knowledge of how web applications are designed and constructed. Students will be able to engineer high quality building blocks for Web applications.

CONTENT:

Detailed study of the engineering methods and technologies for building highly interactive web sites for e-commerce and other web-based applications. Engineering principles for building web sites that exhibit high reliability, usability, security, availability, scalability and maintainability are presented. Methods such as client-server programming, component-based software development, middleware, and reusable components are covered. After the course, students should be prepared to create software for large-scale web sites.

SWE 642 teaches some of the topics related to the exciting software development models that are used to support web and e-commerce applications. We will be studying the software design and development side of web applications, rather than the policy, business, or networking sides. An introductory level knowledge

of HTML and Java is required. SWE 619 is a required prerequisite and SWE 632 is a good background course. The class will be very practical (how to build things) and require several programming assignments.

The course content will focus on client-side and server-side software design and development. We will learn technologies such as **XHTML / HTML5**, **CSS3**, **JavaScripts**, **Ajax, jQuery**; **Web components of JEE platform: Servlets and JSPs**, **Integration of Servlets and JSPs: An implementation of Model View Controller (MVC) Architecture**, **MVC-based frameworks such as Apache Struts2, Tiles2 for uniform and consistent look and layout** , **JDBC**, **Java Persistence API (JPA 2.0)**, **JSON/XML/XML Schema**, and time permitting **RESTful Web services**

Textbook and Readings

- *Web Technologies: A Computer Science Perspective*, Jeffrey C. Jackson, 2007, Pearson Prentice Hall Amazon Pearson Prentice Hall Author (**Required**)
- *Internet & World Wide Web How to Program (5th Edition)* , P.J. Deitel and H.M. Deitel, Pearson Prentice Hall (**Required**)
- Java: How to Program, Nith edition, Deitel and Deitel , Prentice Hall. (**Recommended**)
- Core Servlets and JavaServer Pages, Second Edition, Volume 1: Core Technologies by Marty Hall and Larry Brown (**Recommended**)
- Struts 2 Design and Programming: A Tutorial, by Budy Kurniawan, ISBN: 978-0-9803316-0-8, Brainy Software Corp.(**Recommended**)

Grading

EXAMS:

There will be a midterm and a final exam, both in class. The final exam will focus on material covered after the midterm.

Phone Use Policy:

Phones should be switched off during the mid-term and final exams. Phones, especially smart phones with Internet access and camera, are not allowed to be on person during exams.

HOMEWORKS:

Several homework assignments will be given. I will post the assignments on the class web site or on Blackboard and discuss them in class. You will submit your

solutions by placing links to the executables on your class web sites and submitting the source files through blackboard. Be sure that you are on the class mailing list, as refinements and hints for the assignments will be sent through email as well as posted on blackboard. Assignments will be checked immediately after the due date; if you finish an assignment late, **you must inform us by email when it is ready for us to grade it**. Changing an assignment after the due date without prior permission will be treated as a late submission. Programs will be graded on style and formatting as well as correctness.

INDIVIDUAL PROJECT/PRESENTATION:

Each student will work on an individual project/presentation on a topic related to Web application development/cloud computing. The exact topic will be determined by consulting with the professor. The first draft of the presentation will be due during the 4th week after the midterm exam. The final presentation slides will be due during the last week of class.

MAKEUPS:

Unless arrangements are worked out in advance, missed tests **cannot** be made up, and 10 percent per class meeting will be deducted for late homework submissions. Under no circumstances will any assignment be accepted after the official end of classes (the start of finals week).

GRADING:

Grades will be (approximately): 33% the midterm, 34% the final, 25% the programming assignments, and 8% individual project presentation.

Final averages are assigned a letter grade according to the following ranges:

Percentage	Grade
[99, 100]	A+
[92, 98]	A
[90, 91]	A-
[88, 89]	B+
[82, 87]	B
[80, 81]	B-
[78, 79]	C+
[72, 77]	C
[70, 71]	C-
[60, 69]	D
[0, 59]	F

Schedule (subject to change; check regularly)

Week	Date	Lecture topic	Readings	Announcements
1	8/29	**Course Overview** Introduction to the Internet and World Wide Web	• DD1, paper	HW1
2	9/5	**Intro to Web Software** XHTML/HTML5	• DD 2 and 3	
3	9/12	**Presentation & Styles** Cascading Style Sheets (CSS3)	• DD 4, 5	HW2
4	9/19	**Client-side Software** JavaScripts	• DD 6-13, 16	
5	9/26	**Client-side Software &** More on JavaScripts; Ajax	• Class Notes; http://jquery.com/	HW3
6	10/3	**Rich Internet Applications** jQuery Essential jQuery User Interface (jQuery UI)	• Class notes, http://jquery.com/ • http://jqueryui.com/	
7	10/10	**Columbus Day**	**NO CLASS**	
8	10/17	**Project Presentation Discussion** Mid Term Exam Review		
9	10/24	**Midterm exam (7:20 pm - 10:00 pm)**		
10	10/31	**Server-side Software** Java Servlets, State Handling in Web Applications	• Class notes, & Ch 6, 7, 8	HW4
11	11/7	**Java Server Pages(JSP),**	• Class notes,& Ch 6, 7, 8	

		Integration of Servlets and JSPs Implementing Model View Controller (MVC) Architecture		
12	11/14	**Data Persistence** Java JDBC Java Persistence API (JPA 2.0)	• Appendix C, JHTP 28	
13	11/21	**MVC-based Web Development Framework** Apache Struts2	• Class notes, http://struts.apache.org/	HW5
14	11/28	**MVC-based Web Development Framework** More on Apache Struts2	• Class notes, http://struts.apache.org/	
15	12/5	**Web Data Management** JSON/XML/XML Schema	• Class notes, http://www.w3schools.com/	
16	12/12	**Reading Day**		
17	12/19	**Final exam (7:20 pm - 10:00 pm)**		

Note: DD refers to chapters in Deitel & Deitel's Internet and WWW book, and JHTP refers to chapters in Java How to Program book

Academic Integrity

George Mason's policy concerning student conduct applies. Although students are encouraged to discuss the topics covered in class, all homework assignments, exams, and projects are to be completed individually, unless joint work is explicitly authorized by the instructor. If joint work is authorized, all contributing students must be listed on the submission. Any deviation from this is considered an Honor Code violation, and, as a minimum, will result in failure of the submission and, as a maximum, failure of the class.

Please note that there are two honor code policies: an abstract GMU policy and a more specific departmental policy with regard to code plagiarism, test-taking, etc. The students can find them here: Honor Code Policies

Disabilities

If you are a student with a disability and you need academic accommodations, please see me and contact the Disability Resource Center (DRC) at 993-2474. All academic accommodations must be arranged through the DRC.