



King Fahd University of Petroleum & Minerals
College of Computer Sciences and Engineering
Information and Computer Science Department

SWE 363: Web Engineering & Development (3-0-3)

Syllabus – Fall Semester 2016 (2016-1)

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Class Time, Venue and Instructor Information:

Sec.	Time	Venue	Office Hours
01	MW: 2:10 - 3:25 pm	24-250	MW: 1:00 - 2:00 pm

Course Catalog Description

Internet basics for web applications. Web Engineering fundamentals: requirements, analysis modeling, design modeling, testing. Technologies and tools for developing web applications: markup languages, styling, client and server side programming, data description and transformation. Web services. Advances in web engineering

Pre-requisites: Junior Standing

Course Objectives

- Provide students with conceptual and practical knowledge, and skills required to develop web applications and web services.

Course Learning Outcomes

Upon completion of the course, the student is to have learned the following:

1. Web development techniques and tools including HTML, CSS, JavaScript & AJAX.
2. Page layout and Responsive Web Design.
3. Data Encoding and manipulation using JSON or XML.
4. Development of web applications, web services and related topics including routing, form processing, state management, and database integration.
5. Node.js and associated server-side frameworks.

Required Material

- Lecture notes and some pointed websites
- [Internet and World Wide Web How to Program](#), 5th Edition, By (Harvey & Paul) Deitel & Associates, Harvey Deitel, Abbey Deitel, Prentice Hall, 2012.

Other Recommended References

- Connolly and Hoar, Fundamentals of Web Development, Pearson (2014).

Assessment Plan

Assessment Tool	Weight
Assignments & Quizzes	20%
Major Exam I (Tentative Date: Week 6)	20%
Major Exam II (Tentative Date: Week 11)	20%
Term Project - more info will be announced	10%
Final Exam (semi-comprehensive) [Date: as announced by the registrar]	30%

Tentative Schedule & Major Topics (14 weeks * 2 lectures per week)

Module & Duration	Topics
Internet, Web & HTTP (3 lectures)	Overview of the Internet and World Wide Web, Web Browsers vs. Web Servers, Hypertext Transfer Protocol, URLs, HTTP Requests and Replies, Cookies, Search Engines, Web Caching, Proxies, Developing/Hosting a Static Web Site
HTML & CSS (4 lectures)	Page structure & page presentation, Basic html elements, semantic versus presentational elements, doctypes and encoding, Block versus inline elements (Div vs. Span), Lists, Tables, Forms, Introduction to CSS, Inline/Embedded/Linked Styles, CSS Box Model, Colors, Text and Font properties, Backgrounds and Borders, CSS Selectors, Pseudo-class Selectors, nth-child Selectors, HTML & CSS validation, CSS Positioning, CSS Menus
Page Layout and Responsive Design (2 lectures)	Media Types and Media Queries, Page layout and Responsive Design
JavaScript: Functions & Objects (2 lectures)	Overview of JavaScript, JavaScript compared to Java, Null and Undefined Values, Variables, Scope Rules, Expressions and Operations, Control Statements, Input/Output, Functions, Arrays, Programmer-Defined Functions, Global Functions, JavaScript Objects and JSON, Browser Objects (Document, Window, History, Location, Screen), JavaScript Debugging
JavaScript: DOM & Events (2 lectures)	Document Object Model (DOM), DOM Nodes and Trees, Traversing and Modifying a DOM Tree, DOM Collections, Dynamic Styles, JavaScript Timers, Events handling, Event Object, Mouse and Keyboard Events, Page Events, Timer Events, Form Events (focus and blur, submit and reset), Event Bubbling
AJAX, Web APIs, jQuery (6 lectures)	AJAX Concepts, Synchronous vs. Asynchronous Requests, CORS, XML & JSON processing, Web APIs, REST & CRUD, Google Maps, Introduction to jQuery, Using UI table widgets such as DynaTable, DataTables, or FooTable
ASP.NET Server-Side Programming (5 lectures)	Web Site Development using Microsoft WebMatrix. ASP.NET Web Pages with Razor and Web Helpers. Request & Form Processing, Routing, Database Integration, State Management, Paging
Node.js and associated server-side frameworks (4 lectures)	Introduction to Node.js. The Hapi server-side framework. Building REST APIs using Node.js

Course Policies

- **Class participation:** *Student collaboration* and class participation is encouraged; According to several studies, the more the student engagement in the learning process, the better they learn.
- **Academic honesty:** Students are expected to abide by all the university regulations on academic honesty. Cheating will be reported to the Department Chairman and will be severely penalized. Although collaboration and sharing knowledge is highly encouraged, copying others' work without proper citation, either in part or full, is considered plagiarism. Whenever in doubt, review the university guidelines or consult the instructor. Cheating in whatever form will result in F grade.
- **Attendance**
 - Attendance will be checked at the beginning of each class.
 - Each 2 late attendances will be considered as one absence.
 - 1% will be deducted for every unexcused absence.
 - More than 7 absences will result in a DN grade.
- No make-up of Assignments, Quizzes, or Exams.
- Students are responsible for all announcements made by the instructor.
- Taking notes during the class is highly recommended