THOMPSON RIVERS UNIVERSITY

Course Outline

Department of Computing Science

Faculty of Science

COMP 3540 - 3

Advanced Web Design and Programming (3,1,0)

Fall 2015

Instructor: Phone/Voice Mail:

Office: E-Mail:

Course Description :

Students review client-side web technologies used for static webpages and interactive web applications on clients. Students examine advanced topics in Hyper Text Markup Language, Cascade Style Sheet and JavaScript for interactive web applications that use rich user interfaces. Students then continue with server-side web technologies for dynamic web applications, such as server-side scripting programming, database access for three-tier data-driven applications, and asynchronous communication between client and server for fast partial update of client windows.

Educational Objectives/Outcomes

Upon successful completion of the course, the student will demonstrate the ability to:

- Understand the major areas and challenges of web programming.
- Distinguish web-related technologies.
- Use advanced topics in HTML5, CSS3, JavaScript
- Use a server-side scripting language, PHP
- Use a relational DBMS, MySQL
- Use PHP to access a MySQL database.
- Design and implement
  - typical static web pages and interactive web applications.
  - dynamic web applications.

- o web applications that use asynchronous communication.
- o secure 3-tier data-driven web applications.

Prerequisites
- COMP 2230 Data Structures, Algorithm Analysis, and Program Design
- COMP 2680 Web Site Design and Development

Required Texts/Materials
- Course web site

Other Available/Recommended Resources
- www.w3schools.com
- www.php.net
- www.mysql.com
- www.stackoverflow.com
- J. Murach and R. Harris, PHP and MySQL,Mike Murach & Associates, Inc., 2010.
- P. Deitel, H. Deitel, A. Deitel, Internet & World Wide Web HOW TO PROGRAM, 5th ed, Pearson, 2012.

Syllabus – Lecture Topics:

(Note: Not necessarily in this exact order and duration, but very close)
- Advanced Topics in HTML, CSS3, JavaScript   2 weeks
  - o Event handling
  - o Positioning and centering, overlapping and displaying a popup box, and dimming an area and disabling events over an area
  - o Reading data from the user and sending the data to the server
  - o iframe
- Dynamic Web Applications   1 week
  - o 3-tier architecture for web applications
  - o MVC (Model-View-Controller) model
- Server-Side Scripting using PHP   2 weeks
  - o Control statements
  - o Strings and numbers
  - o Arrays
  - o Functions

- MySQL DBMS   2.5 weeks
  - SQL statements for data manipulation
  - Introduction to MySQL
  - How to use PHP to access MySQL
- Functions Advanced Web Programming   5.5 weeks
  - Secure communication and encryption/decryption
  - Regular expression
  - Session management and timeout
  - Pushing data to client
  - Asynchronous communications with JSON, XML, and AJAX
  - Server-Sent Event (SSE)
  - Development of API using classes and objects
  - Other miscellaneous topics

Syllabus – Seminar/Lab Topics :

- Development of a dynamic web application while solving the following programming problems
  - Positioning and centering, overlapping and displaying a popup box, and dimming an area and disabling events over an area
  - Reading data from the user and sending the data to the server
  - PHP basics
  - PHP to access a MySQL db
  - Use of iframe
  - User registration and authentication
  - Secure communications
  - Regular expressions
  - Cookies and sessions
  - Server-sent event

ACM / IEEE Knowledge Area Coverage

Knowledge Areas that contain topics and learning outcomes covered in the course

Knowledge Area (elective)	Total Hours of Coverage
HCI-Human Computer Interaction	Total 1
HCI/Programming Interactive Systems	1
PBD-Platform-Based Development	Total 12
PBD/Web Platforms	12

Body of Knowledge coverage

KA	Knowledge Unit	Topics Covered	Hours
HCI	Programming Interactive Systems (elective)	Software architecture patterns – Model-View Controller	1
		Data-driven applications (database-backed web pages)	
PBD	Web Platforms (elective)	Web programming languages	12
		Web platform constraints	
		Software as a Service	
		Web standards	