CRN# 12272 ITC 25000-01D Web Systems
CRN# 12278 ITC 25000-01I Web Systems
Cross Listed
CRN# 12271 CPET 49900-02D Web Systems
Cross Listed
Aug. 21-Dec.15
Fall 2018

Course Description
CPET 499 – Web Systems, Cr. 3
ITC 25000 – Web Systems, Cr. 3, Preparation for Course**:** P: or C: ITC21000.
http://bulletin.ipfw.edu/content.php?catoid=13&navoid=327&cpage=15

A study of essential knowledge and skills that an effective web administrator must know. Introduction to fundamental topics of web technologies, web-based systems, and web page design. Topics covered include Internet applications, web site development and publishing, information architecture, client and server-side programming, multimedia technologies and publishing, vulnerabilities, and web site implementation and maintenance.

Course Instructor Information
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Professor's Course Web site: http://www.ecet.pfw.edu/~lin
Blackboard Learn Login: https://pfw.blackboard.com/webapps/login/#

Office Hours:
- Monday 3:30-5:30 PM
- Tuesday 1:00-3:00 PM, 4:30-5:30 PM
- Thursday 1:00-3:00 PM, 4:30-5:30 PM
- Other weekday hours – by appointment

Course Delivery Format
- **Live Lecture (3 hrs/week) – in Class, Face-to-Face lectures with echo 360 capture system:** Room ET 346, Tuesday & Thursday 3:00 – 4:15 PM
- **Internet section students**, login to **Blackboard Learn** for captured lectures, assignments, and other activities

Important Dates: http://www.ipfw.edu/academics/calendar/
- Sept. 3 (Monday) - Labor Day Recess
- Oct. 15-17 (Monday and Tuesday)– Fall Recess
- Nov. 21-25 (Wednesday - Sunday) - Thanksgiving Recess
- Dec. 13, Thursday, 10:300-12:30 PM - Final Exam Schedule, http://www.pfw.edu/academics/finals/

Text Book
Fundamentals of Web Development, **second edition**, 2015, by Randy Connolly and Richard Hoar, published by Pearson, ISBN: 978-0-13-448126-5

Disabilities Statement:
If you have a disability and need assistance, special arrangements can be made to accommodate most needs. Contact the Director of Services for Students with Disabilities (Walb Unio, room 113B, telephone number 481-6658), as soon as possible to work out the details. Once the Director has provided you with a letter attesting to your needs for modification, bring the letter to me. For more information, please visit the web site for SSD at https://www.pfw.edu/disabilities/

ABET General Criterion 3. Student Outcomes

The program must have documented student outcomes that prepare graduates to attain the program educational objectives. There must be a documented and effective process for the periodic review and revision of these student outcomes.
The program must enable students to attain, by the time of graduation:
(a) An ability to apply knowledge of computing and mathematics appropriate to the program's student outcomes and to the discipline
(b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
(c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
(d) An ability to function effectively on teams to accomplish a common goal
(e) An understanding of professional, ethical, legal, security and social issues and responsibilities
(f) An ability to communicate effectively with a range of audiences
(g) An ability to analyze the local and global impact of computing on individuals, organizations, and society
(h) Recognition of the need for and an ability to engage in continuing professional development
(i) An ability to use current techniques, skills, and tools necessary for computing practice.

ABET Program Criteria for Information Technology and Similarly Named Computing Programs (Lead Society: CSAB): These program criteria apply to computing programs using information technology or similar terms in their titles.

Student Outcomes
The program must enable students to attain, by the time of graduation:
(j) An ability to use and apply current technical concepts and practices in the core information technologies of human computer interaction, information management, programming, networking, and web systems and technologies. [IT]
(k) An ability to identify and analyze user needs and take them into account in the selection, creation, evaluation, and administration of computer-based systems. [IT]
(l) An ability to effectively integrate IT-based solutions into the user environment. [IT]
(m) An understanding of best practices and standards and their application. [IT]
(n) An ability to assist in the creation of an effective project plan. [IT]

CPET 499 Course Outcomes

After successfully completing CPET 499, students will have:

- Ability to use all modern browsers and mobile browsers (Criteria a, c, j)
- Ability to use HTML 5 and CSS to design and implement web pages (Criteria a, c, j)
- Ability to use client-side scripting language (JavaScript) to create dynamic web pages (Criteria a, c, j)
- Ability to use XHTML, XML, XSL in web page design (Criteria a, c, j)
- Ability to use server-side scripting languages (PHP) for client-server Web applications (Criteria a, c, j)
- Ability to design and develop a web site and working with web-based databases (Criteria a, b, c, d, e, f, g, h, I, j, k, l, m, n)
- Ability to use REST and SOAP web-services (Criteria c, i)
- Ability to apply security principles for web systems (Criteria c, i)

ITC 250 Course Outcomes

After successfully completing ITC 250, students will have:

- Ability to use all modern browsers and mobile browsers (Criteria j)
- Ability to use HTML 5 and CSS to design and implement web pages (Criteria j)
- Ability to use client-side scripting language (JavaScript) to create dynamic web pages (Criteria j)
- Ability to use XHTML, XML, XSL in web page design (Criteria j)
- Ability to use server-side scripting languages (PHP) for client-server Web applications (Criteria j)
- Ability to design and develop a web site and working with web-based databases (Criteria k, I, m, n)
- Ability to use REST and SOAP web-services (Criteria j)
- Ability to apply security principles for web systems design (Criteria k, I, m, n)

Class Activities and Assessment

The class format will be 3 hour lecture each week, 16 weeks total and require about 8hrs/week for out of class study. Student assignments include programming apps, weekly assignment on reading technical papers, writing short summary, and presentation. Students are also required to complete a final project working in groups of 2 students or by-yourself, present projects in class and complete a written project report.

Grading policy:

- Homework/assignments (including programming exercises and assignments): 35%
- Three one-hour exams: 30% (no makeup exam will be given)
- Class participation (attendance, class engagement/discussion, forums, etc): 10%
- Final Project (Final project proposal, progress reports, demo/implementation, and final report): 25%

Grading Scale: A (90-100%), B (80 -89%), C (70-79%), D (60-69%), F (0-59%)

Homework Assignments: The assignments are expected to be turned in when they are due. Any assignment (homework or lab) turned in late will be graded as if it were turned in on time and then the grade will be reduced by at least one letter grade, depending on how late the material is. If the material is very late (**more than one week**), there will be no credit and no grade given.

Student Behavior: Students are expected to act in class as outlined in the Student Handbook. They are expected to be in class on time, be attentive in class, turn off all cell phones during class, and refrain from extraneous conversations between students except where designated by the instructor.

Students called for military duty: "If you are a student in the military with the potential of being called to military service and /or training during the course of the semester, you are encouraged to contact your advisor immediately."

Tentative Course Outline/Topics of Discussion

1. Web Systems Infrastructure, Protocols, Applications -- Weeks 1, 2, and 3 (Ch 1. Intro to Web Development; Ch 2. How the Web Works)

- Computer Systems & Operating Systems
- Communications and Networking Technologies
- Internet and World Wide Web
- TCP/IP Protocol Applications
- Internet, Intranet (local TCP/IP networks)
- Firewalls
- Web Browsers (Internet Explorer, Google, Opera, etc)
- Mobile Browsers (Safari, Opera Mobile/Mini, Microsoft IE for Mobile, Firefox Mobile, Skyfire)
- Web pages (HTML hypertext documents): static, dynamic web pages
- Web Servers
- HTTP Protocol, Client/Server model
- Web-enabled Applications

2. Hypertext Markup Language HTML 5 and Cascading Style Sheet (CSS) -- Weeks 2, 3, 4, 5 (Ch 3. Intro to HTML; Ch 4. Intro to CSS; Ch 5. HTML Tables and Forms)

- Introduction to HTML 5
- HTML Structures: Heading, Linking, Images, Lists, Tables, Forms, Meta elements
- New HTML 5 Input Elements and Types, Datalist elements, Page structure
- HTML Tables, Forms, Control Elements
- CSS Part I: Inline styles, Embedded style sheets, Conflicting styles, Linking External style sheets, Positioning elements, Backgrounds, Element dimensions, Box model and Text floe, Media types and Media queries, Drop-down menus
- CSS Part II: Text shadows, Rounded corners, Color, Box shadows, Linear gradient, Radial gradients, Multiple background images, Animation, Transitions and Transformations, Multicolumn layout, Media queries

4. Web Media, Week 8 (Ch .7)

- Color Models
- Image Concepts
- File Formats
- Audio and Video

5. Web Applications, Client-Side Scripting, and Design -- Weeks 4, 5, 6, 7 (Ch 8. JavaScript I: Language Fundamentals; Ch 9. JavaScript 2: Using JavaScript; Ch 10. JavaScript 3: Extnding JavaScript with jQuery)

- Intro to Client –side Scripting: JavaSrcipt, VbScript, JavaApplet
- JavasScript Programming I: Control statements, Functions, Arrays, Objects
- Advance JavaScript Programming
- DOM Objects, Events, Forms
- JQuery
- AJAX
- Asynchronous File Transmission

6. Web Server, Administration, Search Engine, Security, Social Network Integration -- Week 2 through week 16 (Ch. 18 Security; Ch. 22 Web Server Administration and Virtualization 19, 16, 18, 20)

- Web Server Hosting and Management
- Domain and Name Server
- Linux and Apache Configuration
- Request and Response Management
- Web Monitoring and Analytics
- Content Management Systems

7. XML Processing and Web Services -- Weeks 9-10 (Ch 19)

- eXtensible Markup Language (XML) Overview
    - XML Structuring data, Namespaces, Document Type Definition (DTDs), XML Schema Documents
    - XML Vocabularies
    - Extensible stylesheet Language and XSL transformation
    - Document Object Model (DOM)
- XML Processing
- JSON
- Overview of Web Services
    - SOAP services
    - REST services
- Ajax (Asynchronous JavaScript and XML)
- Creating and Consuming Web Services

8. Web Servers, Server-side Programming and Databases -- Weeks 8 to 16 (Ch. 11 Into to Server-Side Development with PHP; Ch. 12 PHP Arrays and Superglobals; Ch. 13 PHP Classes and Objects; Ch. 14 Working with Databases)

- Web server selection (Apache, IIS) and implementation
- Common Gateway Interface (CGI)
- Server-side scripting: PHP, Perl CGI, ASP.NET, JavaServlet
- PHP (HyperText Processor) for Server-Side Development
- PHP Arrays, Superglobals, Classes and Objects
- Installation and maintenance
- Introduction to Databases (MySQL, SQL, ORACLE, DB2, etc)
- Web security and vulnerabilities

9. Social Networks and Analytics – Weeks 12-16(Ch. 24)

- **Facebook plugin, Google plugin, Twitter, Instagram, ..**
- **Social Network Integration**
- **Site Monitoring with Ads**
- **Marketing Campaigns**
- **Big Data and Analytics**

10. Web-Based Applications/Final Project -- Weeks 8 to 16 (Ch. 17 Web Application Design)

- **Web application**
- **Client-side and server-side programming**
- **Web server design**
- **MySQL Database**
- **Security Search Engine**
- **Social Network Integration**