CST4709 – Installing and Maintaining Web Servers
(3 credits, 2 class hours, 2 lab hours)

Course Description:
This is a partially online course designed to teach students how to configure, administer and secure a Web Server. The lectures will give the student a solid understanding of how a Web Server works in a computer network. In the lab, the student will apply the concepts learned in the lectures by using Internet Information Services (IIS) 5.0 and Apache Web Servers. The student will manage IIS 5.0 and Apache servers and will configure WWW Services and FTP Services. Once the servers are configured, the student will play the role of Web master and perform various tasks including hosting multiple Web sites on a single computer using the Microsoft Management Console for IIS and the httpd.conf file for Apache. The student will also learn about the risks of connecting a computer to the Internet. Network security, operating system hardening and how to secure the IIS and Apache Web Servers will be discussed. Students will also learn important concepts about secure communications like encryption and digital signatures and how those can be implemented in a Web server using the secure sockets layer (SSL) protocol.

Online Component Description:
- The class meets online (discussion board in Blackboard) on Thursdays 10:00AM through 11:40AM.
- The online material will consist of the part of each chapter that covers the concepts. We will then have the hands-on part when we meet physically every Tuesday at 10:00AM.
- We’ll be using Wimba Pronto as our discussion board. The instructor will be placing questions related to the chapter being covered and students should take part on the discussion.
- Students should check Blackboard twice or more a week for course documents, assignments, and announcements.
- The instructor will be checking Blackboard twice a week to insure that students access the course information.
- Students can use the “backdoor” address of Blackboard https://blackboard-doorway.cuny.edu in case of problems in accessing Blackboard through the CUNY portal

Prerequisites:
CST3619
Required Textbook:

Attendance Policy:
You are permitted to be absent from class (physical/online) a maximum of three class sessions. This is in accordance with college policy that sets the maximum number of permissible absences at 10% of the number of class meetings scheduled for the semester. Also, if you do not post an assignment on the due date, it will correspond to one absence, unless student has a reasonable excuse for the lateness.

Grade:
Final exam 35%
Midterm exam 35%
Projects 20%
Miscellaneous 10%
(Hwks, Quizzes, attendance and participation)

Academic Integrity Policy:
The instructor of the course has the authority to give a grade of F if the student submits the work of another person in a manner that represents his/her work, or knowingly permits one’s work to be submitted by another person without the instructor’s permission. All class projects must be on your own floppy disk. For further information see Student Handbook.

Assignment/Project Policy:
All assignments/projects have a due date. If an assignment/project is late by more that a week, the student will not receive credit for that assignment/project. If an assignment/project is less than a week late, the student will receive a maximum of 70% of the total credit. All practical assignments/projects require that the students write and submit a lab report. Practical assignments without a lab report will receive a maximum of 50% of the total credit.

Instructional Objectives:
To be proficient in this course, students should be able to:
• Demonstrate understanding of what a Web Server is.
• Demonstrate understanding of HTTP and how a Web Server works in a computer network.
• Install a Web Server (IIS 5.0 and Apache) in a Windows platform.
• Configure World Wide Web services with IIS 5.0 and Apache.
• Configure File Transfer Protocol (FTP) services with IIS 5.0.
• Configure a Web server to host several Web Sites.
• Monitor the logs and performance of a Web Server.
• Market and analyze a Web site.
• Demonstrate understanding of different aspects of Computer Security: network, host, and Web Server.
• Secure a Windows 2000 Server and IIS 5.0 Web Server.
• Demonstrate understanding of the Secure Sockets Layer protocol and how to implement secure transactions with a Web Server.
• Demonstrate understanding of the security risks of Server-Side programming and how to prevent them.

Course Outline:

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td><strong>The Basics of Server and Web Server Administration.</strong> Review Internet and WWW, server administration, common tasks and services, network building blocks, comparing We server platforms</td>
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<tr>
<td>2</td>
<td><strong>Preparing for Server Installation.</strong> Identifying server categories, evaluating server components, systems disasters, evaluating network components, setting up IP addressing</td>
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<tr>
<td>3</td>
<td><strong>Installing the Server.</strong> Preparing server for installation, installation process, configuring TCP/IP in Windows and Linux,</td>
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<td>4</td>
<td><strong>Name Resolution.</strong> Domain Name Service (DNS), configuring zone files, installing DNS for Linux, troubleshooting DNS, using WINS to resolve computer names in Windows</td>
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<td>5</td>
<td><strong>Managing a Server.</strong> Networking models, authenticating users, managing users and groups, managing file system permissions, sharing resources, Network policies.</td>
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<td>6</td>
<td><strong>Configuring a Web Server.</strong> Installing Web servers, Apache properties, hosting multiple Web sites, virtual directories</td>
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<td>7</td>
<td>Review &amp; Midterm Exam</td>
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<tr>
<td>8</td>
<td><strong>Installing and Testing a Programming Environment.</strong> Database management, installing DBMS, Web-based programming environment, programming with Databases.</td>
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<td>9</td>
<td><strong>Providing E-mail Services.</strong> E-mail environment and protocols, installing Microsoft Exchange 2000, IMAP4 and POP3 for Linux, configuring E-mail clients.</td>
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<td>10,11</td>
<td><strong>Extending the Web Environment.</strong> FTP services, news servers, remote access to a server, streaming media servers, E-commerce servers.</td>
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<td>12,13</td>
<td><strong>Securing the Web Environment.</strong> Threats and Vulnerabilities, securing data transmission, operating systems, server applications, firewall, proxy server, intrusion detection.</td>
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<td>14</td>
<td><strong>Monitoring and Analyzing the Web Environment</strong> – Monitoring Operation Systems, Web server applications, Analysis Tools for Web Servers</td>
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<tr>
<td>15</td>
<td>Review &amp; Final Exam</td>
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Bibliography:

- B. Laurie, P. Laurie, “Apache: The Definitive Guide”, O'Reilly, 2003, 0596002033
- D. Tansley, “Linux + Unix Shell Programming”, Addison-Wesley, 2000, 02016747626