IMED 2449 - Internet Server - Apache

Course Syllabus – Fall 2019

Instructor Information:
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Important Contacts:
For problems logging in to eCampus, accessing the web site or other technical issues:
Technical Support - call 972-669-6402 or visit the ecampus web site and look for the Student Technical Assistance area.

K103 Lab Phone Number: 972-860-4955

General questions about on-line Computer Information Technology courses offered through Brookhaven:
Jody Cunningham - call 972-860-4567 or E-Mail jlcunningham@dcccd.edu

Prerequisites:
Students should have a basic knowledge of MS Windows including the use of the Windows DOS shell to navigate within the Windows file structure and execute commands. Students should also be familiar with downloading and installing Windows applications. In addition students should have some basic networking experience such as the ability to transfer files between computers. All course programming examples will be done using a Windows PC. If a student wishes to use another type of computer operating system then it will be up to the student to figure out how to make the programming examples work on their computer.

Course Description:
Designing, installing, configuring, maintaining, and managing an Internet server. This course includes both lecture and lab time. This course may be repeated if topics and learning outcomes vary.

Course Overview:
This class provides instruction in the knowledge and skills necessary for installing, configuring, maintaining and managing the Apache Web Server. This course will use project based instruction with the expectation that students will demonstrate course skills and knowledge through the completion of course assignments that demonstrate their ability to install, configure, maintain, and manage an internet server.

Course Objective:
This objective of this course is to provide a comprehensive introduction to the HTTP protocol, web servers and clients generally, and the Apache web server specifically. Other topics covered include virtual hosting, server status monitoring and logging, developing web applications, authentication, security, caching, and proxies.

Learning Outcome:
Students will learn how to install, configure, maintain and manage an Internet server using the Apache Web Server. Students will learn the various forms of Apache authentication and learn how to configure Apache for HTTPS. Students will also learn how to develop web applications and learn about proxies and
caching. In addition to explaining Internet Server concepts, the student will complete a variety of assignments and exercises to reinforce the material in each chapter.

Program Objectives:

- Install Apache in Windows and understand Apache’s installation options.
- Explain the HTTP protocol, MIME, HTTP methods and headers, and cookies
- Explain basic and advance Apache directives.
- Load Apache modules
- Configure virtual hosts and server aliases
- Configure error and access logging
- Explain CGI and client-side and server-side scripting
- Configure Apache for basic authentication and HTTPS
- Explain web site security problems.

Course Outline:

- **Week 1: Introduction to the Web** - Introduce Web technologies; Understand how information flows through the Internet; Examine some development tools used to produce Web pages; Introduce the Apache Web server; Lab 1 Exercises
- **Week 2: Introduction to HTTP** - Examine HTTP Request and Response headers; Examine HTTP methods and status codes; Understand HTTP caching; Introduce HTTP cookies; Lab 2 Exercises
- **Week 3: Installing Apache** - Examine basic encryption technologies; Understand how to download and install the Apache Web server; Introduce Apache configuration directives; Introduce Apache modules; Lab 3 Exercises
- **Week 4: Configuring Apache** - Understand how to configure Apache; Examine Apache Directives; Understand Apache processes; Examine Advance Apache Directives; Lab 4 Exercises
- **Week 5: Advanced Apache Configuration** - Understand advanced Apache directives; Introduce Regular Expressions; Examine Redirection and Rewriting directives; Examine HTTP compression; Lab 5 Exercises
- **Week 6: Virtual Hosts** - Explore Virtual Hosts; Understand Name Based and IP Based Virtual Hosts; Understand Server Aliases; Lab 6 Exercises
- **Week 7: Project I**
- **Week 8: Midterm Exam**
- **Week 9: Monitoring Apache** - Understand Apache monitoring; Understand Error Logging; Understand Access Logging; Introduce Conditional Percent Directives; Lab 7 Exercises
- **Week 10: Web Applications** - Introduce Server Side Scripting; Introduce Client Side Scripting; Understand CGI; Understand Content Negotiation; Lab 8 Exercises
- **Week 11: Authentication, Authorization, and Encryption** - Introduce public key cryptography; Examine authentication modules; Introduce HTTPS; Configure Apache for SSL; Lab 9 Exercises
- **Week 12: Web Security** - Introduce Apache security tips; Understand CIDR Notation; Examine access control examples; Introduce Apache module mod_security; Lab 10 Exercises
- **Week 13: Caching and Proxies** - Introduce Apache cache control headers; Examine Apache module modExpires; Understand caching rules; Introduce Apache proxy modules; Understand reverse proxies; Introduce Pound and Squid servers; Lab 11 Exercises
- **Week 14: Project II**
- **Week 15: Final Exam**

Course Materials:

Book:
Optional:

Peter Wainwright, Pro Apache, Apress, 3rd Edition Copyright 2004,

Computer Resources:

Free download for students of Office 365 – click here for more information.

You will need convenient access to a computer with:

- Microsoft Internet Explorer or Firefox.
- An Internet connection.

Software:

We will also be using the Apache Web Server in this course, which may be downloaded for free. Instructions for downloading and installing will be covered at the beginning of the course.

Workplace and Foundation Competencies:

The Computer Information Technology Department of Brookhaven College is committed to assisting you in obtaining the knowledge and skills that you will need to succeed in today’s dynamic work environment. Toward this goal, the following workplace competencies and foundation skills have been integrated into this course.

- Manage Resources
- Exhibit Interpersonal Skills
- Work With Information
- Apply Systems Knowledge
- Use Technology
- Exhibit Time Management Skills
- Foundation Skills
- Demonstrate Basic Skills
- Demonstrate Thinking Skills
- Exhibit Personal Qualities
- Demonstrate Responsibility Skills

Attendance/Participation Expectations:

- Students will spend at least four to six hours per week preparing for class.
- Students will read the text chapters.
- Students will study and complete the assignments as designated by the instructor.
- Students will complete assignments and tests in a timely manner.
Grading Policy:

You will accumulate course points for work done as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Maximum Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Exams @ 200 points each</td>
<td>400</td>
</tr>
<tr>
<td>2 Projects @ 200 points each</td>
<td>400</td>
</tr>
<tr>
<td>5 HW Assignments @ 20 points each</td>
<td>100</td>
</tr>
<tr>
<td>11 Lab Assignments @10 points each</td>
<td>110</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1010</strong></td>
</tr>
</tbody>
</table>

Your final course grade will be determined as shown:

<table>
<thead>
<tr>
<th>Points Earned</th>
<th>Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>900 - 1010</td>
<td>A</td>
</tr>
<tr>
<td>800 - 899</td>
<td>B</td>
</tr>
<tr>
<td>700 – 799</td>
<td>C</td>
</tr>
<tr>
<td>600 – 699</td>
<td>D</td>
</tr>
<tr>
<td>0-599</td>
<td>F</td>
</tr>
</tbody>
</table>

Late Points

A late penalty will be applied to any assignment turned in late unless the instructor has been notified with a valid reason prior to the assignment due date. A penalty of 1 point per day will be assessed on any HW or Lab assignment that is turned in late. Late projects will be assessed a penalty of 5 points per day. After 1 month, any missing assignments will receive a grade of 0.

Your grade point total is available under My Grades in eCampus.

Last date to withdraw with a W: Thursday, November 14th, 2019

Your instructor reserves the right to modify the course requirements, assignments, grading procedures and other related policies as circumstances dictate. Additional exam or course information may be posted in the Announcements section of the course throughout the semester.

End-of-semester grades will not be mailed to you by the college. You may receive your grade through the Internet by using the following directions:

- Browse to the **DCCCD eConnect** web site.
- Click the **Current Student Menu** tab.
- Find the **My Personal Information** section.
- Click on **Check My Grades (GPA)**.
- The system will then ask you to login, do so.
- Select **Term** – choose the correct semester.
- Select **Grade Type** (CR – Credit Grades).
Click the SUBMIT button and your grades will display.

All students in this course are expected to abide by the rules and regulations as set forth in both the DCCCD Student Code of Conduct. Failure to comply may result in legal and/or disciplinary action.

Incomplete ("I") Grading:
Incompletes are only considered in those circumstances where a student has had a documentable crisis or emergency occurring sometime in the last several days of the course, preventing the student from completing the final few items of required work (a last Project or Exam, for example). The "I" is designed only to provide a little extra time to finish up, and is not granted to students who are substantially behind in their work as the end of the course approaches. It is not to be considered as a grade to request should you simply not have the time to get your work done during the semester.

If you feel you meet the qualifications for an "I" and would like to request one, contact your Instructor as soon as possible. Students who do not qualify for an "I" may not complete any coursework for credit after the final Absolute Deadline as shown in the Course Schedule.

Institutional Polices:
Drop/Withdrawal, Stop before you drop, Financial Aid, International students, Religious Holidays, ADA, Academic Integrity, Repeating a course, Grade reports, Instructor’s right to Modify, and FERPA can be found at the following link: DCCCD Institutional Polices

DCCCD Rules:
All students in this course are expected to abide by the rules and regulations as set forth in both the DCCCD Student Code of Conduct and the DCCCD Rules for Responsible Computing. Failure to comply may result in legal and/or disciplinary action. For more information, visit DCCCD Rules for Responsible Computing