American Public University System
American Military University | American Public University

CSCI335 16

Course Summary

Course : CSCI335 **Title :** Web Applications Programming
Length of Course : 16 **Faculty :**
Prerequisites : CSCI325 **Credit Hours :** 3

Description

Course Description:

This course introduces students to the client-side and server-side mechanisms for developing dynamic web applications with persistent data storage. Modern scripting languages and the DOM are used for client-side programming. Server-side programming using new web programming languages and frameworks. Considerations for security. This course focuses on broad knowledge of many tools/technologies rather than in-depth knowledge of a single tool/technology. (Prerequisite: CSCI325)

Course Scope:

The primary goal of this course is to introduce students to a workflow for developing Web applications with Flask, during which a single small application is gradually developed into a well-featured blogging and social networking application. To this extent, the course covers such topics as forms, templates, databases, and e-mail support in the context of Web development. Additionally, some of the content is dedicated to topics specific to blogging and social networking context (e.g., user authentication, roles and permissions, blogging, followers, and so on). Finally, the course also covers material relevant to pre-publishing of Web-based applications (e.g., testing, performance analysis, and deployment options).

Objectives

CO-1: Utilize **Web Application** development tools **to Design**, implement, validate, and maintain Web-based applications.

CO- 2: Apply Web-based Application Infrastructure using API (Application Programming Interface), libraries, and scripts to deploy web-based projects.

CO-3: Develop **static** and dynamic Web pages using the best practices of user experience, **efficient coding,** and user interface design

CO- 4: Customize Email systems, Blogs, User authentications, and user profiles by deploying Web-based applications

CO-5: Explain and Design web-based applications that incorporate database types, relationships, user roles, and comments.

CO-6: Utilize testing techniques to maintain the coding quality and performance of Web-based Applications

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Outline

Week 1:

Learning Outcomes

CO1 Utilize Web Application development tools to Design, implement, validate, and maintain Web-based applications.

Required Readings

Please see e-reserve for this week's required readings.

Assignments

Welcome Discussion

Week 1 Discussion

Programming Exercise #1

Recommended Optional Reading

See course for the optional reading for the week.

Recommended Media

See course for this week's supplemental media

Week 2: Templates

Learning Outcomes

CO1: Utilize **Web Application** development tools **to Design**, implement, validate, and maintain Web-based applications.

CO3: Develop **static** and dynamic Web pages using the best practices of user experience, **efficient coding,** and user interface design

Required Readings

See Course e-reserve for required readings.

Assignments

Week 2 Discussion

Programming Exercises

Recommended Optional Reading

Supplemental reading and resources are listed in the classroom

Recommended Media

Week 3: Web Forms

Learning Outcomes

Course objective

CO1: Utilize **Web Application** development tools **to Design**, implement, validate, and maintain Web-based applications.

Weekly Objectives

LO-1.4: Explain the architecture and the process for building Web forms by using HTML and form validations

LO-1.5: Develop Web forms using Flask framework

Required Readings

The required readings are available in the course e-reserve

Assignments

Week 3 Discussion

Programming Exercise

Recommended Optional Reading and Media

The supplemental reading and media are available in the classroom

Week 4: Databases

Learning Outcomes

Course Objective

CO-5: Explain and Design web-based applications that incorporate database types, relationships, user roles, and comments.

Weekly Objectives:

LO-5.1 Describe the Relational and Non-Relational Database Terminology, relationships, SQL, and use of the database with Flask
LO-5.2 Illustrate Database operations for a Web-based application using Flask

Required Readings

Required readings are available in the course e-reserve

Assignments

Week 4 Discussion

Programming Exercise

Course Project Proposal

Recommended Optional Reading and Media

Optional Reading and Media are listed in the classroom

Week 5: Email

Learning Outcomes

Course Objective

CO 4: Customize Email systems, Blogs types, User authentications, and user profiles by deploying Web-based applications

Weekly Objectives:

LO:4.1 Explain the process of sending emails within a Flask application
LO-4.2: Implement email support within a Flask application

Required Readings

Required readings are available in the course e-reserve

Assignments

Week 5 Discussion

Programming Exercises

Assignment Part 1: Best Practices in UI/UX

Recommended Optional Reading and Media

Optional Reading and Media are listed in the classroom

Week 6: Large Application Structure

Learning Outcomes

Course Objective

CO1: Utilize Web Application development tools to Design, implement, validate, and maintain Web-based applications.

CO- 2: Apply Web-based Application Infrastructure using API (Application Programming Interface), libraries, and scripts to deploy small, medium, and large projects.

Weekly Objectives:

LO-1.6: Set up, test, and run a Flask application

LO-2.1:Explain a way to organize a large application in packages and modules using Flask

Required Readings

Required readings are available in the course e-reserve

Assignments

Week 6 Discussion

Programming Exercise

Recommended Optional Reading and Media

Optional Reading and Media are outlined in the classroom

Week 7: User Authentication

Learning Outcomes

Course Objective

CO 4: Customize Email systems, Blogs types, User authentications, and user profiles by deploying Web-based applications

Weekly Objectives:

LO-4.3: Explain the most common methods of user authentication
LO-4.4: Create the authentication system for Flask within a Web-based environment

Required Readings

Readings are available in the course e-reserve

Assignments

Week 7 Discussion

Programming Exercise

Recommended Optional Reading and Media

Optional Reading and Media are available in the classroom

Week 8: User Roles

Learning Outcomes

Course Objectives:

CO- 2: Apply Web-based Application Infrastructure using API (Application Programming Interface), libraries, and scripts to deploy small, medium, and large projects.

CO-5: Explain and Design web-based applications that incorporate database types, relationships, user roles, and comments.

Weekly Objectives:

LO-2.2: Implement the user roles and permissions within the Flask framework
LO2.3:Use scripts to write database roles and assign privileges.
LO-5.3: Explain the concept and the importance of user roles and the associated privileges within the context of a Web-based application

Required Readings

Required readings are available in the course e-reserve

Assignments

Week 8 Discussion

Programming Exercise

Project Part 2: Implementation of best practices

Recommended Optional Reading and Media

Optional Reading and Media are listed in the classroom

Week 9: User Profiles

Learning Outcomes

Course Objectives:

CO1: Utilize Web Application development tools to Design, implement, validate, and maintain Web-based applications.
CO 4: Customize Email systems, Blogs types, User authentications, and user profiles by deploying Web-based applications

Weekly Objectives:

LO1.8: Design and implement a variety of user profiles in Flask- based Web application
LO-4.5: Explain the basic principles and mechanisms of user profiles in an application

Required Readings

The required readings are available in the course e-reserve.

Assignments

Week 9 Discussion

Programming Exercise

Recommended Optional Reading and Media

Optional Reading and Media are listed in the classroom

Week 10: Blog Posts

Learning Outcomes

Course Objectives

CO 4: Customize Email systems, Blogs types, User authentications, and user profiles by deploying Web-based applications

Weekly Objectives:

LO-4.6: Explain the purpose and the significance of the techniques for reusing templates, pagination of long lists of items, and working with rich text
LO-4.7: Implement functionality for users to read and write blog posts in Flask

Required Readings

The required readings are available in the course e-reserve

Assignments

Week 10 Discussion

Programming Exercise

Recommended Optional Reading and media

Optional Reading and media are listed in the classroom

Week 11: Followers

Learning Outcomes

Course Objectives:

CO-5: Explain and Design web-based applications that incorporate database types, relationships, user roles, and comments.

Weekly Objectives:

LO-5.4: Explain the process of keeping track of directional links between pairs of users and using these links in database queries
LO-5.5: Implement a follower feature within the Flask framework

Required Readings

Required readings are available in the course e-reserve

Assignments

Week 11 Discussion

Programming Exercise

Recommended Optional Reading and Media

Recommended Optional Reading and Media are available in the classroom

Week 12: User Comments

Learning Outcomes

Course Objective:

CO-5: Explain and Design web-based applications that incorporate database types, relationships, user roles, and comments.

Weekly Objectives:

LO5.6: Explain the importance of user interaction as being a key to the success of a social blogging platform
LO-5.7: Implement a user comment feature within the Flask framework

Required Readings

Required Readings are available in the course e-reserve

Assignments

Week 12 discussion

Programming Exercise

Recommended Optional Reading and Media

Recommended Optional Reading and Media are available in the classroom.

Week 13: Application Programming Interfaces

Learning Outcomes

Course Objective:

CO- 2: Apply Web-based Application Infrastructure using API (Application Programming Interface), libraries, and scripts to deploy small, medium, and large projects or web-based projects.

Weekly Objectives:

LO-2.4: Conceptualize and communicate the idea of an application functionality as an API that could be used by clients
LO-2.5: Implement a Flask-based RESTful API

Required Readings

Required Readings are available in the course e-reserve

Assignments

Week 13 Discussion

Programming Exercise

Recommended Optional Reading and Media

Recommended Optional Reading and Media are listed in the classroom

Week 14: Testing

Learning Outcomes

Course Objective

CO-6 Utilize testing techniques to maintain the coding quality and performance of Web-based Application

Weekly Objectives:

LO-6.1: Explain fundamental aspects relevant to unit testing of applications
LO-6.2: Design and implement unit tests in Flask-based applications

Required Readings

Required Readings are available in the course e-reserve

Assignments

Week 14 Discussion

Programming Exercise

Recommended Optional Reading and Media

Recommended Optional Reading and Media are available in the classroom

Week 15: Performance

Learning Outcomes

Course Objective:

CO-6 Utilize testing techniques to maintain the coding quality and performance of Web-based Application

Weekly Objectives:

LO-6.3: Identify and discuss the important aspects impacting the performance of Web applications
LO-6.4: Optimize database queries as a way of improving performance of Web applications

Required Readings

Required Reading are available in the course e-reserve

Assignments

Week 15 Discussion

Programming Exercise

Recommended Optional Reading and Media

Recommended Optional Reading and Media are listed in the classroom

Week 16: Deployment

Learning Outcomes

Course Objectives:

CO- 2: Apply Web-based Application Infrastructure using API (Application Programming Interface), libraries, and scripts to deploy web-based projects.
CO-6 Utilize testing techniques to maintain the coding quality and performance of Web-based Application

Weekly Objectives:

LO-2.6: Describe the process of deployment options for Flask applications
LO- 6.5 Design the web-based application in a professional manner

Required Readings

Required Readings are available in the course e-reserve

Assignments

Week 16 Discussion

Programming Exercise

Evaluation

Assessment Components

Discussions	20%
Programming Exercises	20%
Course Programming Project	40%
Course Research Paper	20%
Total	100%

Grading:

Name	Grade %

Materials

Course Guidelines

Course Guidelines and Resources

Course Materials

Specific Course Materials related to your course are located in the Learning Material Section of the Content for each week.

eReserve

Various resources from the APUS Library & the Open Web are used. Required resources for your course are provided in a course eReserve.

Required Software

- Students must be able to open and save in Microsoft Office formats. Microsoft offers access to Office free for active students. Features can be accessed from inside of your university provided Outlook email account, http://mail.mycampus.apus.edu. Use your regular student ID and password if prompted. Once loaded into your Outlook inbox, clicking the menu button in the upper left will let you access the Office online apps and the Office 365 area to install Office desktop apps. If you have any questions, please contact classroomsupport@apus.edu.
- Adobe Acrobat Reader: A free download is available from http://www.adobe.com/support/downloads/main.html

Required Technology

The Technology Requirements chart opens in new window outlines the minimum technical requirements of the hardware and software needed to access your course work. Also included in the chart are recommended requirements, which if followed, will make your online learning experience more fulfilling.

Emailing your Instructor

To communicate with your instructor in the MyClassroom environment, APUS recommends using the MyCampus email account provisioned to you for use with the university. Faculty are monitoring this location for communication, and required to use it when communicating with students. Access to the MyCampus email can be found in the eCampus, by clicking on the envelope icon that appears at the top of the page when you first login.

Please note that while you can initiate sending emails to your professor and classmates through the Classlist tool in MyClassroom, emails written will be sent directly to their MyCampus email addresses, and their responses will be sent directly to yours. You will not be able to view the emails within the MyClassroom environment. For this reason, we strongly advise using your MyCampus email address and campus password to login to the Office 365 Widget that appears on the "Course Home" page of this course, to allow you to see when new emails arrive, and to get easy access to your inbox, calendar, and OneDrive.

If you do not know your MyCampus email address to login to the widget, go to the navigation bar at the top of this page, click on your name, and then "Notifications". Your full email address will be displayed under "Contact Methods". Use this in conjunction with your campus password to login to your MyCampus Email account, or to the Office 365 widget.

Interaction Guidelines

Online universities promote the advancement of knowledge through positive and constructive debate -- both inside and outside the classroom. Discussions on the Internet, however, occasionally can degenerate into needless insults and "flaming." Such activity and the loss of good manners are not acceptable in a university setting; basic academic rules of good behavior and proper "netiquette" must persist. Remember that you are in a place for the fun and excitement of learning that does not include descent to

personal attacks, or attempts to intimidate or stifle the discussion of others.

Despite the best of intentions, jokes and -- especially -- satire can easily get lost or become unintentionally offensive. If you feel the need for humor, you may wish to add "emoticons" to help alert your readers: ;-), :).

Please check the weekly lessons for any additional resources.

Communications

Student Communication

To reach the instructor, please communicate through the MyClassroom email function accessible from the Classlist of the Course Tools menu, where the instructor and students email addresses are listed, or via the Office 365 tool on the Course homepage.

- In emails to instructors, it's important to note the specific course in which you are enrolled. The name of the course is at the top center of all pages.
- Students and instructors communicate in Discussion posts and other learning activities.
- All interactions should follow APUS guidelines, as noted in the Student Handbook, and maintain a professional, courteous tone.
- Students should review writing for spelling and grammar.
- Tips on Using the Office 365 Email Tool

Instructor Communication

The instructor will post announcements on communications preferences involving email and Instant Messaging and any changes in the class schedule or activities.

- Instructors will periodically post information on the expectations of students and will provide feedback on assignments, Discussion posts, quizzes, and exams.
- Instructors will generally acknowledge student communications within 24 hours and respond within 48 hours, except in unusual circumstances (e.g., illness).
- The APUS standard for grading of all assessments (assignments, Discussions, quizzes, exams) is five days or fewer from the due date.
- Final course grades are submitted by faculty no later than seven days after the end date of the course or the end of the extension period.

University Policies

Consult the Student Handbook for processes and policies at APUS. Notable policies:

- Drop/Withdrawal Policy
- Extension Requests
- Academic Probation
- Appeals
- Academic Dishonesty / Plagiarism
- Disability Accommodations
- Student Deadlines
- Video Conference Policy

Mission

The mission of American Public University System is to provide high quality higher education with emphasis on educating the nation's military and public service communities by offering respected, relevant, accessible, affordable, and student-focused online programs that prepare students for service and leadership in a diverse, global society.

Minimum Technology Requirements

- Please consult the catalog for the minimum hardware and software required for undergraduate and graduate courses.
- Although students are encouraged to use the Pulse mobile app with any course, please note that not all course work can be completed via a mobile device.

Disclaimers

- Please note that course content – and, thus, the syllabus – may change between when a student registers for a course and when the course starts.
- Course content may vary from the syllabus' schedule to meet the needs of a particular group.