Las Positas College
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Course Outline for CS 38

PERL AND CGI PROGRAMMING

Effective: Fall 2017

I. CATALOG DESCRIPTION:
CS 38 — PERL AND CGI PROGRAMMING — 2.00 units

Introductory course in Programming Evaluation and Reporting Language (PERL) and its use in elementary Common Gateway Interface on a UNIX server. Topics include basic PERL grammar and syntax, creating CGI scripts and HTML calls.

1.50 Units Lecture 0.50 Units Lab

Prerequisite
CS 1 - Computing Fundamentals I
with a minimum grade of C

Strongly Recommended
CS 41 - Intro to Linux/LPI Linux+ Certification

CS 37 - Web Programming

Grading Methods:
Letter or P/NP

Discipline:
- Computer Science

	MIN
Lecture Hours:	27.00
Lab Hours:	27.00
Total Hours:	54.00

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: 1

III. PREREQUISITE AND/OR ADVISORY SKILLS:

Before entering the course a student should be able to:

A. CS1

Before entering this course, it is strongly recommended that the student should be able to:

A. CS41
B. CS37

IV. MEASURABLE OBJECTIVES:

Upon completion of this course, the student should be able to:

A. Several of these outcomes are being developed throughout the entire programming sequence. Upon completion of the course, to an intermediate level, students should be able to: Programming Skills
1. Explain and apply the fundamental concepts of CGI programming
2. Present the elements and features of the development environment
3. Explain and use the design process for CGI
4. Define and use decision and repetition structures in PERL
5. Define and use functions, and storage classes
6. Use operators and functions in PERL
7. Define and use dynamic data structures
8. Define and explain trends in programming standards with CGI vs. other technologies
9. Write, compile, test and debug PERL programs and CGI scripts
10. Define and use data types and variables in PERL
11. Define and use arrays in PERL
12. Define and use user interfaces in HTML
13. Define and use file I/O in PERL
14. Define and develop class modules
15. Develop and use event-driven programs using CGI

B. Technical Documentation
    1. Write in a concise and precise form appropriate for technical documentation
    2. Explain and use the processes and techniques of technical documentation
    3. Record system specifications accurately and completely
C. Testing and Debugging
    1. Select debugging and testing methodology, and develop comprehensive and systematic test plan
    2. Develop testing procedures
    3. Conduct tests in the most efficient way
    4. Test programs, and document errors and solutions
D. User Interface Design
    1. Define the requirements for the user interface
    2. Detail the development process and methods best suited for the project
    3. Develop user interface (UI) to meet user requirements
    4. Test UIs
E. Problem Solving
    1. Recognize a wide range of problems, and assess their impact on the system
    2. Use a wide range of troubleshooting methods and tools to isolate problems
    3. Select the appropriate approach to identify causes of the problem based on the given situation

V. CONTENT:
A. Introduction to CGI concepts
B. Overview of PERL
    1. numeric/string constants
    2. scalars
    3. arrays
    4. hashes
    5. string and arithmetic operators
    6. functions
    7. output
    8. conditional statements
    9. looping
    10. syntax and grammar
C. Creating CGI scripts with PERL
    1. uploading
    2. setting UNIX file permissions
    3. executing the script
D. HTML form tags to obtain user input. Post and Get
E. Hashing
F. Getting data into the CGI script from the HTML form tags
G. Analyzing incoming data
H. Hidden data on the form
I. Cookies
J. Print command and HTML
K. Files in CGI
    1. Parsing data input

VI. METHODS OF INSTRUCTION:
A. **Lecture** -
B. **Demonstration** -
C. **Projects** - Optional: Programming project completed in teams
D. **Lab** - Lab Programming Assignments
E. **Discussion** -

VII. TYPICAL ASSIGNMENTS:

A. Using HTML form tags, create a form to: 1. Enter integer quantities for 4 products (widgets, gadgets, gidgets, doodads) 2. Use Customer Name, Street Address, City, State, Zip, Telephone Number 3. Calculate subtotals for each product, total of the order, shipping and handling (10% of the total), sales tax (8.5% of the total), grand total 4. Use product prices as: widgets $10.25 per unit, gadgets $7.25 per unit, gadgets $4.50 per unit, doodads $5.10 per unit 5. Have the form pass the quantities to the PERL script which performs the calculations and then passes a HTML form back with the customer's order listing products ordered (quantities greater than one), quantities, subtotals, sales tax, shipping and handling, grand total with a confirmation and Thank You. 6. Have your PERL script stored on the UNIX server. B. Rewrite exercise A to: 1. Have the input data come from a data file. 2. Produce a form that is saved in an output file.

VIII. EVALUATION:
A. **Methods**

B. **Frequency**

1. Frequency of evaluation
    a. Recommend 2 or 3 exams plus final examination
    b. Recommend programming assignment to cover each topic within course content. Contents can be combined.
2. Types of Exam Questions
    a. Write an HTML form tag to input a customer name from the keyboard.
    b. What is the command to execute a perl script? What would cause a valid script program not to run?
    c. Write the command to create and array of integers of size 10 and initialize each element to –1.

IX. TYPICAL TEXTS:
1. Elizabeth Castro *PERL and CGI for the World Wide Web.*, PeachPit Press, 1999.
2. Eric Herrmann *Teach Yourself CGI Programming with PERL 5 in a Week.*, Sams Net, 1996.

X. OTHER MATERIALS REQUIRED OF STUDENTS:
A. Software 1. A freeware PERL compiler for Microsoft Windows is available for the PERL portion of the course and for use at home. PERL is available with the UNIX operating system.
B. Equipment 1. The institution must have a lab UNIX server for student accounts set up for Common Gateway Interface (CGI). 2. The lab's stations must also have stations connected to the web in order to test their CGI and perform their assignments.