CSC 368 – Systems Programming Languages
Course Syllabus

Contents:

Course Description:

This course will cover design principles and implementation of systems programming languages. Topics include but are not limited to: syntax, data types, control structures, and storage management. Four system programming software language tools will be studied: shell scripts, Perl, PHP, and SQL.

Prerequisite:

The prerequisite is Computer Programming Concepts II (CSC 275 or equivalent). Some exposure to programming languages is certainly useful. If you do not have these prerequisites, you may need to spend more time on preliminary reading and/or skill enhancement during the first few weeks of the course. If this is the case, please let me know. Please also take into account that this course typically brings together a diverse group of students, which makes it impossible to "standardize" backgrounds and experiences. Thus, it is your responsibility to identify the areas in which you need to do extra work and bring yourself up to the required competency.

Course Organization:

The course is organized into four parts:

1. Unix/Linux Shell Programming. In this part, we will study the various components of Unix software, features, examine the programming tools.
2. SQL Programming. We will use the MySQL database. We will learn data definition language, data manipulation and SQL. We have a three part manual covering MySQL. This manual is essential for programming projects and the exam.
3. Learning Perl. We will learn about programming in Perl. We will cover but not limited to scalar data, arrays, subroutines, input/output, matching regular expressions, and control structures.
4. PHP for the WWW. In this part of the course, we will create on how to create a web site and connect to a database using PHP.

Course Objectives:

The course is designed to give you fundamental knowledge of programming, and enrich your experience in shell scripting, SQL database, Perl scripts and PHP. Upon the completion of the course, you will be able to:

1) Create shell scripts in Linux or Unix
2) Develop programs in Perl
3) Create SQL databases using MySQL
4) Develop websites using PHP

Course Materials:

Textbooks**:**

Unix Shell Programming, Stephen G. Kochan and Patrick Wood, SAMS. 3rd Ed. ISBN: 9-780672-324901

Learning Perl, Randall Schwartz and Tom Phoenix, O'Reilly Press. 6th Ed. ISBN: 9-781449-303587 (5th edition may be used)

PHP for the Web, Larry Ullman, Peachpit Press, 4th Ed. ISBN: 9-780321-73345 (3rd edition may be used)

Class Lectures: The lecture slides cover the four programming languages. The PDF lecture slides are available through the Blackboard system in the content area "Lecture Slides".

Additional Documents: There will be several additional documents used throughout the course, such as: "Policies and Procedures Regarding Academic Honesty", "Linux Login Primer" and "MySQL Database Primer".

Practical Exercises: There will be several assignments in scripting and programming.

Grading:

The final grade for this course will be evaluated based on the following chart:

1. Quiz 1	2%
2. Programming Assignments	8%
3. Quiz 2: Shell Programming	10%
4. Project 1: MySQL	10%
5. Project 2: Perl	10%
6. Project 3: Perl	10%
7. Project 4: Perl	10%
8. Mid-Term Exam	20%
9. Final: PHP	20%

Final grades are assigned as follows:

A 94-100%
A- 90-93%
B+ 87-89%
B 83-86%
B- 80-82%
C+ 77-79%
C 73-76%
C- 70-72%
D+ 67-69%

D 63-66%
D- 60-62%
F 59% and below

You may qualify for up to 3% of extra credit, which is assigned after the letter grades are calculated. Extra credit is assigned based on the class participation, professionalism, conduct, and punctuality that you demonstrate in all aspects of the course and all communications. Extra credit, if any, is awarded to students who may be in need for it despite their hard work.

I will use the following codes in the Blackboard gradebook when grading assignments and projects:
DNE (Does Not Execute) Program has errors or does not execute on the server.
LT (Late) Assignment or project was submitted after the due date.
NC (No Comments) There are no comments or insufficient comments in the program.
NN (No Name) Your name and NetID was not included as comments in the code.
ST (Style) Your code has major formatting errors or does not follow proper programming techniques.

Regulations:
All your work in this course must be your own. There will be no group work assigned. Every project and assignment must be your own work. Otherwise, you will be violating the rules of professional conduct and your actions will be regarded as plagiarism/cheating. A plagiarized assignment or test, whether given or received, will receive no credit. A student who is caught in plagiarism twice will receive grade of F for the course. The document "Policies and Procedures Regarding Academic Honesty" (http://csc.uis.edu/#Honesty) explains what constitutes plagiarism/cheating. Please read this document.

Accommodation Statement:
Reasonable accommodations are available for students who have a documented disability. Please notify the instructor during the first week of class of any accommodations needed for the course. All accommodations must be approved through the Office of Disability Services (ODS) in Human Resource Building, Room 80 (HRB 80). (217) 206-6666. http://www.uis.edu/disabilityservices/

Facilities:
Blackboard system: You must have an account for the Blackboard system. For account assistance, please email techsupport@uis.edu or call 217-206-6000.

Linux: The uisacad5.uis.edu server will be the host for the programming languages. The server can handle shell programming, Perl scripts, MySQL database programming, and PHP scripts. You may read the "Linux Login Primer" on how to access UISACAD5.

MySQL: All students registered for the course must have a MySQL account to access the MySQL database server. More details on how to obtain an account as well as connect to and use simple SQL commands are in the "MySQL Database Primer I" document, which is posted in the Course Resources on Blackboard. Note that MySQL has a separate password authentication and you may need to change the initial password after the first login to the database system.

Your Workstation: You will need the following software on the workstation you use to complete your assignments: A web browser compatible with Blackboard; Notepad, Wordpad or equivalent; a PDF reader and PuTTY. Mac or UNIX based systems will have different requirements.

Late Work:
Submission of assignments or project, or taking exams on time is highly encouraged. A minimum twenty percentage point (20%) penalty is deducted if the submission is beyond the due date. Additional penalties of 10% per week late may also be applied. However, once per semester, you may ask for an extension of time before the deadline by email in order to avoid penalty.

Program Submission Guidelines:

For any assignment or project that requires programming please follow these guidelines. If you fail to follow these guidelines you will NOT be given a chance to resubmit your assignment.

Blackboard: Most assignments and projects that you submit will consist of code that you have written. You will upload them into Blackboard. Each program you submit should be of the appropriate filetype (*.sh for shell script, *.pl for Perl, etc.) encoded in plaintext. If you submit MS Word files or other file types I will grade that program as 'failed to execute'. Most assignments require multiple files. You may create *.zip files or *.tar files that you will upload into Blackboard.

Late Work: Submission of assignments, projects, and exams on time is highly encouraged. You may ask for an extension of time before the deadline by email in order to avoid a late penalty. Any extensions are at the instructor's discretion. All assignments are due by 11:59 PM Central Time on the due date.

Header: You must include your name, NetID, name of course and assignment, and the date your program was written as comment lines at the top of your program. This should appear right after the first line in shell scripts and php programs (**#!/bin/bash** or **#!/usr/bin/perl**). Your header will look something like this:

```
#!/usr/bin/perl
#-----------------------------
# Kevin Zepp
# kzepp2
# CSC 368 - Project 2
# August 31, 2014
#-----------------------------
```

Comments: All of your programs must include comments describing each major section or function. For simple programs this may only be one or two comment lines. Larger programs will require more comments.

Programming Style: You should always use proper indentation, spacing and alignment in your code. See here for more details: http://en.wikipedia.org/wiki/Programming_style

Your programs MUST be tested and executable on uisacad5: All of your programming assignments must execute without errors on uisacad5 for full credit. If you write your assignments on a Windows computer don't forget to execute the **dos2unix** and **chmod** commands on the file so that it will run in Linux. Also, don't forget that most programs require a special line at the beginning of the file. For a shell script that line is: **#!/bin/bash** or for Perl the line is **#!/usr/bin/perl**

GOTO Functions: Do not make use of the goto function in any programming language we study. Historically goto functions have been considered harmful to proper structured programming techniques. We will not be using them in this course.

Cheating: Cheating will not be tolerated. This includes sharing your code with other students or copying code from other students. Any cheating will result in an automatic failing grade for that assignment or project.

Deductions: These deductions will be applied to any Assignment or Project if the guidelines listed above are not followed:

Late Work	20% plus 10% deduction every week beyond due date
Header/Comments/Style errors	up to 25%
Program does not execute	up to 25%
Making use of GOTO function	25%
Cheating	Fail assignment

Schedule:
Please see the course schedule document posted in the Course Information section of Blackboard.