Course Description

This course discusses major software architectural styles and effective ways to use existing tools and compose new tools to build modular and reusable software.

Topics Covered: An Overview of Software architectures, Pipe and Filter architectures (unix utilities, pattern matching using Regular Expressions, awk, sed, shell scripts), Unix Programming tools (make), Version control tools, Client Server architectures (web engineering tools using HTML, CSS, Javascript, CGI with perl and XML Technologies) and Object-Oriented architectures (Java applications).

At the end of the course, students should be able to

- Use Unix utilities and write scripts using awk, sed, bourne shell and perl.
- Use regular expressions for pattern matching effectively.
- Use make and cvs.
- Use HTML, CSS and Javascript to build web pages.
- Use Perl to write CGI programs.
- Use BlueJ environment to program Java applications.
Instructor: Rani Mikkilineni  Email Address: rmikkilineni@scu.edu

Phone: 554-4927  Office: EC 246  
Office Hours: MWF: 1.00-2.00PM TR: 6.00-7.00 PM or by appt.


Web Sources: Several web links will be provided for topics covered.

Class Notes, assignments and announcements will be on the web and accessible via ANGEL course management system. You need a course id and password to log into this site. Instructions will be given on the first day of classes.

Grading:

Assignments and Project: 20% + 10%

Midterms (2): 15% + 15%

Final (Open Book): 25%

Labs (Mandatory): 10%

Class Participation: 5%

Note: No makeup exams will be scheduled except for medical reasons.

Assignments are due in class on the date posted on the assignments.

Late assignments are subject to a 15% penalty per calendar day and will not be accepted after the first week of due date.
**Syllabus** *(tentative, subject to minor changes)*

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>An Overview of Software Architectural Styles. Pipes and Filter Architecture - Unix utilities, Intro to pattern matching with regular expressions.</td>
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| Week 2 | Text Processing using *awk* and *sed*  
*Lab: Unix utilities.* | Assignment 1 given           |
| Week 3 | Writing Bourne Shell scripts  
*Lab: Using regular expressions effectively.* |                               |
| Week 4 | Client-Server Architectures and intro to Web Technologies: HTML, CSS, Javascript  
*Lab: writing a makefile* | Assignment 2 given.  
**Midterm 1 (Open Book) on 14th Oct.** |
| Week 5 | Web Technologies (cont)  
*Lab: Version Control using CVS* | Project given               |
| Week 6 | Intro to Perl  
*Lab: Writing Perl scripts* |                               |
| Week 7 | CGI with Perl  
*Lab: Writing a CGI Programs* |                               |
| Week 8 | XML technologies (XML, Domian Object Model, DTD, XSLT)  
*Lab: XML validation and parsing* | Assignment 3 given.  
**Midterm 2 (Open Book) on 11th Nov** |
| Week 9 | XML technologies (XML, Domian Object Model, DTD, XSLT)  
Object-Oriented architectures and UML  
*Lab: XML parsing using XSLT* |                               |
| Week 10 | Object-Oriented architectures and building Java Applications  
*Lab: Java Programming using BlueJ* | Project Demos               |
|       | **Final Exam (Open Book)**                                            |                               |
Some Useful Links

Unix
Unix Home page:  http://www.unix.org/
SCUDC Design Center Helpme Web page:  http://helpme.scudc.scu.edu/
SCUDC Unix Tutorial:  http://helpme.scudc.scu.edu/unix-tutorial.html
SCUDC Applications setup:  http://helpme.scudc.scu.edu/setup.html
SCUDC GNU setup:  http://helpme.scudc.scu.edu/gnu.html

awk:  Introduction to awk:  http://www.vectorsite.net/tsawk.html

sed:  http://sed.sourceforge.net/grabbag/tutorials/

Bourne Shell Programming:  http://sayle.net/book/

Unix Regular Expressions:
http://www.softlab.ece.ntua.gr/facilities/documentation/unix/grymoire/Regular.html

HTML and JavaScript

HTML Primer:  http://www.htmlprimer.com/

Learn HTML 4:  http://www.htmlcenter.com/tutorials/tutorials.cfm/71/HTML/

W3School’s HTML4 reference:  http://www.w3schools.com/tags/default.asp
W3School’s CSS tutorial:  http://www.w3schools.com/css/default.asp
W3School’s Javascript :  http://www.w3schools.com/js/default.asp
JavaScript Tutorial for Programmers:
http://www.wdvl.com/Authoring/JavaScript/Tutorial/
Make: http://www.eng.hawaii.edu/Tutor/Make/
http://www.mtsu.edu/~csdept/FacilitiesAndResources/make.htm

CVS: http://cvsbook.red-bean.com
http://www.csc.calpoly.edu/~dbutler/tutorials/winter96/cvs/

Perl

A perl tutorial: http://archive.ncsa.uiuc.edu/General/Training/PerlIntro/

The perl you need to know:
http://www.wdvl.com/Authoring/Languages/Perl/PerlfortheWeb/toc.html


XML

W3C XML tutorial: http://www.w3schools.com/xml/default.asp

XSLT tutorial: http://www.w3.org/Style/XSL/

Java

Bruce Eckel's Free Electronic Book: Thinking in Java

Some Programming Tools

Cygwin for windows: http://cygwin.com/

Download perl: http://www.perl.com/download.csp
http://perl.about.com/od/downloadperl/

An XSLT parser: Saxon http://saxon.sourceforge.net/

BlueJ for Java: http://www.bluej.org/