Instructor     Dr. Lixin Tao, ltao@pace.edu, http://csis.pace.edu/~lixin
               GC Office: GC416A, (914)422-4463
               PLV Office: G320, (914)773-3449

Lectures      Graduate Center Lab, 6PM – 9:35PM, Wednesdays

Office Hours  Wednesdays 2PM – 6PM and 9:35PM – 10:35PM at office GC416A

Syllabus

Integrated hands-on coverage of fundamental concepts and technologies for enterprise and Internet computing. Topics include data storage; XML data specification, parsing and validation; data and language translation; networking and Web technology overview; software framework technology for controlling software system complexity; and a roadmap for the enterprise computing technologies.

Learning Objectives and Expected Outcomes

1. Students will master the key language processing concepts and skills, and be able to
   o understand the function of major language processing components include lexical analysis, grammars, parsers, and interpreters;
   o use XML technologies to model and validate business data;
   o implement Web-based GUI with HTML;
   o use XSL and XSLT to transform data from XML to HTML for presentation in Web browsers.

2. Students will master basic database programming skills, and be able to
   o understand the basic concepts and components of relational databases;
   o understand basic SQL language features for creating tables, inserting/deleting data into tables and making inquiries through JDBC;
   o design and implement Java applications based on both ACCESS and MySQL databases.

3. Students will master the networking fundamentals, and be able to
   o understand the layered network architecture and fundamental properties of TCP/IP;
   o understand and conduct multi-thread programming and thread synchronization;
   o use the socket abstraction to implement simple client/server applications.

4. Students will master the fundamental Web application architecture and concepts, and be able to
   o justify the tiered Web architecture;
   o understand HTTP requests/responses and HTML form processing;
   o use servlets to implement a simple Web application on the Tomcat;
   o understand the proxy design pattern underlying all remote method/function invocation technologies, and redo an existing Web application as a Web service on Tomcat.

5. Students will master the importance and fundamental concepts of software framework based programming, and be able to
o explain the relationship among object-oriented programming, component-based programming, and service-oriented architecture;
o understand the design and implementation of a simple software framework for networking;
o redo an existing networking application with a simple software framework to see how we can hide networking and multithreading from programmers.

6. Students will get the roadmap of the Internet computing, and be able to
   o understand the fundamental concepts of cluster-based computing and grid computing;
o understand fundamentals of server-based computing technologies;
o understand fundamentals of service-oriented computing;
o write a simple parallel program in Java that can run on a cluster of PCs.

Quizzes

There will be two one-hour open-book quizzes on fundamental concepts.

Programming Assignments

There will be three programming assignments. The source code of answers to the assignments must be submitted through Blackboard by the due date. Each day of late submission will incur a 10% penalty on the grade for the assignment, and under no circumstances, except for cases with instructor approval beforehand, an assignment submission will be accepted after five days past the deadline.

Final Exam

There will be a two-hour final exam covering all fundamental concepts of the course.

Class Attendance

If a student is absent from a class without a justifiable and provable reason, he/she will suffer a 5% deduction in the final weighted total of his/her grades. A student missing four classes without justifications will fail the course.

Grading Scheme

<table>
<thead>
<tr>
<th>Assignment</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>60%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>20% (10% each)</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20%</td>
</tr>
</tbody>
</table>
CSIS School Policy Regarding Academic Integrity

1. Definition.

Students must accept the responsibility to be honest and to respect ethical standards in meeting their academic requirements. Integrity in the academic life requires that students demonstrate intellectual and academic achievement independent of all assistance except that authorized by the instructor. The following constitute academic dishonesty. The list is not inclusive.

a) Exams
i) Copying from another student’s exam.
ii) Deliberately allowing other students to see and copy from your exam.
iii) Using notes or calculators without permission from the professor or proctor.
iv) Passing notes or calculators to other students without permission.

b) Papers and projects
i) Copying others’ writing without proper reference.
ii) Copying code or work from other students outside a team environment. This could be either from printouts and notes or from electronic media. This includes copying the structure of a program while changing cosmetic details such as identifiers and comments.
iii) Deliberately allowing other students to copy your code or work, again either from printouts, notes or from electronic media. (This does not preclude a student “helping” another on a project as long as it is limited to giving information/hints and not code/solutions.)
iv) Submitting a paper, program, or project that was done by someone else.
v) Collaboration with one or more other students without the prior permission of the instructor.

2. Consequences. The following consequences will be affected:

a) The first student offense may result, at the discretion of the instructor, in penalties including a zero on the offending course work or an F for the offending course.
b) The second student offense in any course may result in an F for the offending course.
c) The third student offense in any course may result in dismissal from the University.
c) The Dean’s office shall keep a student record of all student offenses occurring in courses offered by the School of CSIS including the first offense. This record should be destroyed when the student graduates from the University. The record shall be associated with the student and not with any particular course.

3. Procedures for determining an offense. The following procedure will be used:

a) If the student admits to the offense, the appropriate penalty shall be enforced.
b) If the student contests the charge, the Chair of the department in which the course was offered will make a decision as to the facts of the case. If the professor is also the Chair, this step could be skipped.
c) If the student disagrees with the Chair’s decision, he or she may request a hearing from the Undergraduate or Graduate Scholastic Standing Committee, depending upon the student’s status. The Committee shall make a recommendation to the Dean concerning the facts of the case.
d) Both the professor and the student may submit to the Committee relevant information in writing. The professor and/or the student may also appear before the committee, but usually not concurrently. No others may attend the Committee hearing, but the Committee may also consider the written statement of witnesses and other concerned persons.
e) The decision of the Dean shall be final.
f) A confirmed student offense shall be entered into the student’s record in the Dean’s office.