22C:196 FUNDAMENTALS OF WEB PROGRAMMING
Syllabus

Instructor: Teodor Rus
Office: 201J MLH, Phone: 335-0742
Class hours: MWF 2:30pm–3:20pm, 105 MLH
Office hours: MWF 9:30–10:20am, 201J MLH

Important dates:
Class time: MWF, 2:30pm–3:30pm, 105 MLH
Socket Programming Project: 19 September 2011 or before
Client Programming Assignments: 17 October 2011 or before
Server Programming Assignments: 14 November 2011 or before
Self-Selected Application Project: 5 December 2011 or before

Note: This course is given by the College of Liberal Arts and Sciences. This means that class policies on matters such as requirements, grading, and sanctions for academic dishonesty are governed by the College of Liberal Arts and Sciences. Students wishing to add or drop this course after the official deadline must receive the approval of the Dean of the College of Liberal Arts and Sciences. Details of the University policy of cross enrollments may be found at:
http://www.uiowa.edu/ provost/deos/crossenroll.doc

Academic Honesty:
The College of Liberal Arts and Sciences expects all students to do their own work, as stated in the CLAS Code of Academic Honesty. Instructors fail any assignment that shows evidence of plagiarism or other forms of cheating, also reporting the student’s name to the College. A student reported to College for cheating is placed on disciplinary probation; a student reported twice is suspended or expelled.

Procedures for Students with disability:
I must hear from anyone who has a disability which may require some modification of seating, testing, or other class requirements so that appropriate arrangements may be made.

Please see me after class or during my office hours.
1 Rationale

Web programming grew together with the World Wide Web (WWW) during the last few years at a stage where almost entire computer technology is web programming dominated. The short term goal of this course is to provide fundamental knowledge one needs in order to engage in web programming applications and research. On the other hand I believe that web programming reached a stage where its accomplishments need a systematic foundation. Therefor the long term goal of this course is to initiate the development of an infrastructure that supports web programming.

2 Topics

Conventional programming environments (independent of programming paradigm) did evolve themselves on stages, from ad hoc problem solving approaches to sound and well defined systems, through a process of infrastructure development. This is why I think that currently we are in front of a web programming stage where an infrastructure of web programming is on reach. The elements of this infrastructure are already available and they only need to be synthesized into a final product. They are provided by computer network communication protocols, socket programming, client-server paradigm of computer programming, and stand-alone software components used as building blocks of Service Oriented Architectures (SOA). Communication protocols provide the framework for semantic manipulation of web information; socket programming facilitate computer interaction on the network; stand alone software components and software registry provide the basis for software service organization into language independent software libraries that provide support for Web Based Problems Solving Process (WBPSP). Therefore the development of an infrastructure of web programming is on reach. Since I see it so clearly, I would like my students to be the first to start building it systematically, and thus, first to take advantage of it.

3 Student enrollments

Both graduate and undergraduate students can benefit from the knowledge I intend to share in this class and can equally contribute to the class teaching end evolution towards the goal of an infrastructure of web programming. The myriad of industrial and academic web application projects that populate today computing research will provide myriad of ideas for new research development in our environment; myriad of new computer-based industrial and academic companies that pop-up on daily basis will provide a solid basis for jobs. And the satisfaction of understanding where computer based problem solving come from and where does it go to in the future will be a joy for all of us.
4 Methodology

I intend to use a hands-on-application basis while teaching this courses. The topics I intend to cover in Fall 2011 offering of this class are a continuation and improvement on the topics which I have covered in the Fall 2009 and Fall 2010 offerings. These topics will be grouped into three components as follows:


2. Client-Server programming and its Web support and implementation. I intend to make sure that we understand how browsers and servers that populate today Internet are performing and what kind of programming tools are there that help people develop such amazing application as Google and eCommerce. In this offering we will also look into XML language and tools and its applications for Web Service (WS) development.

3. In order to understand the power of computer based problem solving process using web programming the third group of topics will cover Service Oriented Architecture. The usage of SOA for event-driven application implementation will be illustrated with such applications as airline flight control, anti-money laundering, and event-driven productivity infrastructure.

5 Textbook


6 Student activity and assessment

To achieve its goal wee need to rely on lot of software packages which may be freely available but which, for one reason or another, are not at our reach. Hence, one component of students activity in this class will be the downloading of this software, installing it on our lap-tops and on the machines available in our labs, and the implementation of the most illustrative projects using this software. This imply that
student attendance of the class and her/his involvement in class teaching should be a component of student’s assessment. Since the class is project-based, there will be no formal exams or assignments during this class teaching. The work expected to be carried out by students during this class and its contribution to the student final grade is predefined and consists of the following:

1. Class attendance (no absentees, 20 points) represents 20% of your grade (a D).  
   **Due date:** permanent.

2. (1) above (20 points) plus a self-selected project showing student ability to handle Internet protocols and sockets programming (20 points) represents 40% of your grade (a C).  
   **Due date:** 19 September 2011 or before.

3. (1), (2) above (40 points) plus two client-based applications chosen from the textbook chapters 1 through 8, (25 points), represents 65% of your grade (a B).  
   **Due date:** 17 October 2011 or before.

4. (1), (2), (3) above (65 points) plus two server-based applications self-chosen from the textbook chapters 9 through 15, (25 points), represents 90% of your grade (an A-).  
   **Due date:** 14 November 2010 or before.

5. (1), (2), (3), (4) above (90 points) plus a self-selected application project (Ajax, Tomcats, WS), (10 points), add to 100 points, which represents 100% of your grade (an A).  
   **Due date:** 5 December 2011 or before.

However, this class is very heterogeneous: attendees expand on a large spectrum of knowledge and interests (from early undergraduate to late PhD). Therefore, this policy need be amended, allowing students to replace the assessment requirements by special projects they can perform during this class, such as:

- Presents one or more lectures on topics of interest but not scheduled for this offering of the class. Example: CSS, XML;

- Chose to demonstrate Web programming by performing special project’s. Example implementing and demonstrating Ajax.

- Chose to demonstrate research on Web programming by approaching and solving various hot problems. Examples of such problems are Airline Flight Control, Anti-Money Laundering, Event-Driven Productivity Infrastructure.

- Use Service Oriented Architectures to perform Computational Emancipation of Application Domains!
Hence, students can perform supplementary work that will be used as bonus points to be added at student records. The bonus points will be used to improve student’s final grade thus playing a kind of waiver for the evaluation procedure defined above. To get individual bonus points (or class assessment wavers) a student needs to use the following procedure:

1. Prepare a written document where the student proposes a bonus project.

2. Provide a clear and sound description of the work to be performed specifying both the amount of grading credits claimed for this work and the area of grading she wants to wave (class attendance, socket programming, client programming, server programming). The Self-Selected Project cannot be waved.

3. Provide a schedule of the work to be done proposing the validation method at each step of the schedule.

4. Submit this document to the instructor for approval.

Instructor will study this document and will approve/disapprove it as appropriate.

7 General CLAS Policies

- **Administrative Home:** The College of Liberal Arts and Sciences (CLAS) is the administrative home of this course and governs matters such as the add/drop deadlines, the second-grade-only option, and other related issues. Different colleges may have different policies. Questions may be addressed to 120 Schaeffer Hall or see the Academic Handbooks, [www.clas.uiowa.edu/students/academic_handbook/index.shtml](http://www.clas.uiowa.edu/students/academic_handbook/index.shtml).

- **Academic Fraud:** Plagiarism and any other activities when students present work that is not his or her own are academic fraud. Academic fraud is reported to the departmental DEO and to the Associate Dean for Academic Programs and Services who enforces the appropriate consequences, [www.clas.uiowa.edu/students/academic_handbook/ix.shtml](http://www.clas.uiowa.edu/students/academic_handbook/ix.shtml).

- **Making a Suggestion or a Complaint:** Students with a suggestion or complaint should first visit the instructor, then the course supervisor and the departmental DEO. Complaints must be made within six months of the incident, [www.clas.uiowa.edu/students/academic_handbook/ix.shtml#5](http://www.clas.uiowa.edu/students/academic_handbook/ix.shtml#5).

- **Accommodations for Disabilities:** A student seeking academic accommodations should register with Student Disability Services and meet privately with the course instructor to make particular arrangements, [www.uiowa.edu/sds/](http://www.uiowa.edu/sds/).
• **Understanding Sexual Harassment**: Sexual harassment subverts the mission of the University and threatens the well-being of students, faculty, and staff.
  www.sexualharassment.uiowa.edu.

• **Reacting Safely to Severe Weather**: In severe weather, the class members will seek shelter in the innermost part of the building, if possible at the lowest level, staying clear of windows and free-standing expanses, (Operations Manual 16.14. i.).