Services Oriented Architecture and Cloud Computing

Subject to Change

Last updated: January 5, 2013

Note that this is a two course COT6931 sequence. Students registering in the Fall will also have to register in the corresponding Spring, 2013 selection to complete their Computer Science Project.

| Course and Section | COT 6931- Section 0505 (Fall) - Section 0488 (Spring)  
Tuesday 6:00 - 8:45 PM - Central Time |
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<tbody>
<tr>
<td>Course Title</td>
<td>Computer Science Project</td>
</tr>
<tr>
<td>Course Credit Hours</td>
<td>3 hours each semester</td>
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</tbody>
</table>
| Instructor          | Norman Wilde  
for email, office hours, etc, see instructor's home page at:  
http://www.cs.uwf.edu/~wilde. |
| Course Website      | For registered students: http://elearning.uwf.edu |

Background

This two semester group project will concentrate on Services Oriented Architecture (SOA) and Cloud Computing. Please read General Expectations for background on SOA and on what is expected of you in this course.

Catalog Description:

Capstone course for Masters students who do not elect the thesis option. Normally taken for 3 credits in each of two consecutive semesters. Students will define and carry out a project that shows mastery of some topic in computing and produces some concrete product such as a report or a computer program. Students should not enroll until they have completed at least 12 semester hours of their graduate coursework.

This will be a domain-based project, in which we will explore the techniques and challenges associated with SOA and Cloud Computing.
**Student Learning Outcomes:**

**The SOA approach to software**

On completing this course, students will be able to describe the objectives of the Services Oriented Architecture approach to software, the design and management principles underlying this approach, and the advantages and disadvantages of the SOA approach as compared to alternative approaches.

**Infrastructure Cloud Computing**

On completing this course, students will be able to demonstrate that they can deploy and run software services using Amazon's Elastic Compute Cloud (EC2).

**Security for SOA services**

On completing this course, students shall be able to present an assurance case showing how a particular service they have written can resist known threats.

**Expertise in one specific technology for implementing interoperable services**

On completing this course, students will be able to demonstrate that they can use one of the specific “technologies” for implementing interoperable services. Each student will be assigned one of these technologies, typically a package of runtime environment/programming environment/programming language. Technology package alternatives include:

1. Microsoft Internet Information Server / Visual Studio / Visual Basic or C#
2. Apache Ode / Eclipse / WS-BPEL (or Oracle SOA Suite / WS-BPEL)
3. Oracle GlassFish Application Server / Netbeans / Java
4. Apache httpd with php / any text editing environment / php

After some initial deployment exercises, the student will use this technology package throughout their remaining work in this course. Each student will have to work independently to master his/her technology and use it to deploy services to the cloud that can interoperate with those services developed by others.

While all of these technologies are in widespread use for services computing, your instructor has experience in only a few of them. Also, since students are geographically dispersed, he will probably not be able to help you with programming issues if you get stuck. **So this course will put a premium on your ability to teach yourself!**

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**COURSE STRUCTURE**

**Elluminate Sessions (both semesters)**
There will be on-line Elluminate sessions Tuesday evenings for lectures, scheduled discussions with the instructor and/or other class members, documentation and code inspections, student presentations, etc. Sessions will not take place every week; there will probably be about 6-8 scheduled sessions per semester. The session schedule will be posted so students will normally have at least 2 weeks’ notice of sessions that they should attend.

Students are expected to punctually attend at least 75% of all scheduled sessions and to participate in discussions etc. during these sessions.

**SOA Reading Assignments (Fall semester)**

There will be a series of reading assignments from the Josuttis text and a few other sources. Many of these will require summarizing and evaluating the concepts presented in the reading.

**Software Security Readings (Fall semester)**

Each student will select one of two books on software security, read it over the course of the semester, and post summaries of key points in the discussion log according to a given schedule. Each student will also comment on another student's posting.

**Service Programming Assignments (Fall semester)**

There will be a sequence of programming assignments starting with deployment of services using EC2 and going on to writing simple services using your assigned technology package.

**Presentation (Fall Semester)**

Each student will give at least one presentation to the class.

**Interoperable Services Project (Spring Semester)**

Each student will be assigned a service to write and deploy to EC2 using his/her chosen technology package. The services will have to interoperate with existing and new services written using different technologies. We will follow a security process with a sequence of project milestones and security "touchpoints" involving a student presentation of an "assurance case" to show that their design, code and deployment are resistant to specified threats. The final services may be deployed to the UWF’s Open SOALab for use by educators and researchers.

**Final Technical Report (End of Spring Semester)**

We will either do individual technical reports or a group report to which all students will contribute. The report should be of such quality that you would be proud to show it to current or future employers.

**Resources**

• Software Security Readings: Select one of:

• Occasional additional readings from the literature.

Students should also plan to purchase one or more books on their assigned technology package. While there are many web sites with wiki’s and tutorials, most of these are very fragmented. So it is strongly recommended that you seek out at least one published book that can guide you through your independent learning experience.

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**Grading / Evaluation**

**First Semester**

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<tr>
<th>Component</th>
<th>Weightage</th>
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<tbody>
<tr>
<td>SOA Reading assignments</td>
<td>20%</td>
</tr>
<tr>
<td>Software Security Readings</td>
<td>10%</td>
</tr>
<tr>
<td>Service Programming Assignments</td>
<td>50%</td>
</tr>
<tr>
<td>Presentation</td>
<td>15%</td>
</tr>
<tr>
<td>Punctual Attendance and Participation</td>
<td>5%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
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**Second Semester (tentative)**

The grade system for the second semester is given separately in the document *Project Milestones, Schedule, and Grading* available on the instructor's web site (http://www.cs.uwf.edu/~wilde/201301_COT6931_SOA/projectContent/)

The overall grading scale is:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Score</th>
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<tbody>
<tr>
<td>A :</td>
<td>94 - 100</td>
</tr>
<tr>
<td>A- :</td>
<td>90 - 93</td>
</tr>
<tr>
<td>B+ :</td>
<td>87 - 89</td>
</tr>
<tr>
<td>B :</td>
<td>83 - 86</td>
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Withdrawals and Incompletes:

An "I" grade will not be given unless at least 70% of the course work is completed and must be approved by the Department Chair.

See the UWF calendar (http://uwf.edu/registrar/calendar.cfm) for the withdrawal deadlines for this semester. UWF policy is that withdrawals after the deadline will not be approved except for:

1. A death in the immediate family.
2. Serious illness of the student or an immediate family member.
3. A situation deemed similar to categories 1 and 2 by all in the approval process.
4. Withdrawal due to Military Service (Florida Statute 1004.07)
5. National Guard Troops Ordered into Active Service (Florida Statute 250.482)

Students who do not officially withdraw will be assigned a standard letter grade. Late withdraws must be approved by the students adviser, instructor of the course, department chairperson, and finally, the University Academic Appeals Committee.

Expectations for Academic Conduct/Plagiarism Policy:

As a UWF student you subscribe to the following policy:

"As members of the University of West Florida, we commit ourselves to honesty. As we strive for excellence in performance, integrity—personal and institutional—is our most precious asset. Honesty in our academic work is vital, and we will not knowingly act in ways which erode that integrity. Accordingly, we pledge not to cheat, nor to tolerate cheating, nor to plagiarize the work of others. We pledge to share community resources in ways that are responsible and that comply with established policies of fairness.

Cooperation and competition are means to high achievement and are encouraged. Indeed, cooperation is expected unless our directive is to individual performance. We will compete constructively and professionally for the purpose of stimulating high performance standards. Finally, we accept adherence to this set of expectations for academic conduct as a condition of membership in the UWF academic community."

You are responsible for reviewing the UWF policy on academic misconduct at http://www.uwf.edu/judicialaffairs/.

Note for Students with Disabilities:
The Student Disability Resource Center SDRC at the University of West Florida supports an inclusive learning environment for all students. If there are aspects of the instruction or design of this course that hinder your full participation, such as time limited exams, inaccessible web content, or the use of non-captioned videos and podcasts, please notify the instructor or the SDRC as soon as possible. You may contact the SDRC office by e-mail at sdrc@uwf.edu or by phone at (850) 474-2387. Appropriate academic accommodations will be determined based on the documented needs of the individual.