University of Nebraska Omaha

COURSE: ISQA 4380 Distributed Technologies and Systems – Online
SESSION: Spring 2012
INSTRUCTOR: Dr. George Royce
OFFICE: Room 367
HOURS: I will be available to take chat/IM and calls on Monday from 5:30 to 6:30 PM CST, Thursday from 7 to 8 AM CST (online only), Friday from 5 to 6 PM and Saturday from 10:00 to 11:30 AM (check my website http://roycesite.com/george for any changes in these hours). You can also email me and we can set up a time to discuss any questions you have.
CONNECT ROOM: Connect to me and ask questions via adobe connect meeting room during my office hours or we can set up special times: http://unoconnect.adobeconnect.com/georoyce
E-Mail george.royce@gmail.com
PHONE and IM: Home: 402-216-0414 leave a voice message if I am not there. Cell phone is 402-312-7929 if urgent. You can also connect with Oovoo: groyce , Skype: gkroyce, and gtalk or my gmail. I also use Microsoft IM (george.royce@live.com). I prefer IM over email if you are comfortable with IM but email is acceptable. For email, **please use my gmail account** .

Course Description:

More and more companies have a variety of mission critical distributed systems running in their data centers (on-premise) and a growing number of distributed systems that are running in third party data centers and in the cloud. Companies are looking for IT professionals that can work with and integrate both on-premise and cloud based distributed business systems. This course introduces students to distributed systems management and development. Students will work with and manage distributed systems that are running on premise and in both the private and public clouds. Students will gain hands on experience with Amazon cloud based services and will integrate these services with on premise systems running in the PKI data center. Students will learn to build and manage web services so they can be integrated with traditional web application or can be consumed by mobile applications. Teams will learn multiple systems integration techniques to deliver business value to customers in companies that may a have variety of systems that are both on premise and in the cloud. Students will also learn about the special security and performance challenges of distributed systems and learn techniques to deal with the challenges. Course topics include distributed systems architecture, middleware, Internet-based systems development, security and performance. The goal of the course is to equip students to make the architecture and infrastructure-related decisions needed for successful development and management of contemporary distributed systems that can support traditional browser based clients as well as mobile applications.

Prerequisites:

ISQA 3310 - Managing the Data Base Environment

Objectives:

After taking this course you will, among other things, be able to

- Understand the strategic potential of distributed computing systems for business processes.
- Provide and understand a framework for classifying distributed computing architectures and distributed applications.
- Map out information systems architecture and assess the fit between existing and needed architectures.

- Classify and evaluate the numerous flavors of middleware in order to make decisions about middleware acquisition to support integrating both on-premise and cloud based systems.
- Understand the role of the transaction processing, object-oriented, Internet-based technologies, rich internet applications and mobile applications in distributed enterprise computing and make decisions about how and when to apply them.
- Understand the factors that contribute to the performance of distributed systems and incorporate this understanding in the design of client/server systems.
- Understand the impact of web services (both SOAP and REST services) and their standards on distributed computing development and systems integration.
- Understand Service Oriented Architecture (SOA) and how it enables IT to deliver business value and agility in a rapidly changing client market (Windows, IOS, Droid, Blackberry, etc...)
- Develop and manage a modest size web application which accesses a database and external web services.
- Develop a web service which can be consumed by other applications.

Text:

Enterprise Architectures and Integration with SOA – Concepts, Methodology and a Toolset. Amjad Umar, NGE Solutions, Inc. January, 2010. ISBN: 0-9727414-002. Available at the bookstore and on Amazon.

Grading:

Activity	Points	Date Due
Weekly discussion board questions, participation activities and integration problems based on the materials covered in the lectures/demonstrations/readings.	240	Graded each week
Assignment 1 – PHP web application running on Amazon Web Services. It consumes a web service and then connects to a Microsoft SharePoint Server	170	P1 – Feb 11th P2 – Mar 3rd
Assignment 2 – Cloud based workflow application integration using SalesForce's Force.com environment	70	March 18th
Assignment 3 – Cloud based business process modeling environment (Blueworks Live)	80	April 2nd
Assignment 4 – Eagle Financial Services Systems Integration Project	170	April 30th
1st Exam	120	Feb 30th – Mar 2nd
2nd Exam	150	April 30th – May 4th
Total	1,000	

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Points	*Grade*
97-100%	A+
93-96%	A

90-92%	A-
87-89%	B+
83-86%	B
80-82%	B-
77-79%	C+
73-76%	C
70-72%	C-
67-69%	D+
63-66%	D
60-62%	D-

Final Grade: Your final grade in this course is based on the percentage of points that you receive out of the total maximum 1000 possible points for the course. The grade scale is shown in the above scale.

Best Practices for Online Class

Every online class is a little different just like the differences you experience in traditional classes. So even if you have taken other online classes, you need to know about my expectations and format.

Our course is accessible through the Blackboard (BB) site and all documents are posted to blackboard. You will submit assignments; check for announcements and post on discussions boards at Blackboard. You will also listen to the lectures via links posted on Blackboard. The course syllabus lays out the course schedule and what is due each week. It also provides readings that you need to accomplish each week.

Try to set aside a regular time for working on this class each week. Start by checking the course schedule to see what is required for the week. Read the required readings, listen to the lectures and then prepare the homework for each week. You have two kinds of assignments. These are weekly participation assignments and four assignments that will be described in the first two sessions of the class. The deadlines for all assignments is in the schedule. Refer to the schedule often! There is something due every week. Check out the “Submit” directions in the schedule.

All deliverables must be submitted on time. One key benefit of an online class is the flexibility. You can set your own schedule. You will know what’s coming up and you can work anytime during the week. But you cannot miss the deadlines. Since there are no class sessions to attend, it is your responsibility to view the online lectures, read the textbook chapters, and do the weekly problems and assignments. Don’t underestimate the work, and don’t underestimate the importance of keeping yourself motivated and on schedule.

Course Policies and Reminders

Late Assignments: 5% deduction per day late. Assignments will not be accepted after a week late unless you have been given permission to do so by the instructor.

Cheating – If you copy another person's work in whole or in part, you will receive no credit for the assignment. If you allow your work to be copied by another person, you will receive no credit for the assignment. Two such incidents can result in a failing grade for the course.

Sources of Information: You must always give the source of your information. It may be information you find on the web, in a book or even in your work life. You must always cite the source!

Disabilities: ADA Notice – Accommodations are provided for students with verified disabilities. For more information, contact Services for Students with disABILITIES. In EAB 117 or 554-2872, TTY 554-3799.

Course Schedule:

You are responsible for any schedule changes posted in Blackboard (BB) Announcements. All lectures are accessible via the Web at the URL posted in the BB site each week.

Date	Topics	Assignments Due
Week 1 **Jan 9th**	**Course Introduction** 1.1 Welcome to 4380 course and teacher 1.2Introduction to Distributed Technology and Systems and Business Value 1.3 Introduction to the Internet and PHP 1.4 Sign Up for Amazon Web Services 1.5 Demonstration of how to use WinSCP with Amazon Web Services	**Due by end of first week of semester:** **Read:** Course Syllabus (posted in Blackboard Course Documents) **Watch:** Topics 1.1, 1.2, 1.3, 1.4 and 1.4 **Do:** Check out your ID and password at the vulcan web site and register for Amazon Web Services for your PHP web services assignment by Noon Jan 16 CST (if you have any trouble let me know) **Submit:** Activity 1 - Answers to Class 1 discussion questions **Due by Noon Jan 16 CST**
Week 2 **Jan 16th**	**Overview of Distributed Systems** 2.1 PHP development and Overview of Assignment 2 2.2 Introduction to XML 2.3 Distributed Systems Generations 1 to 5.	**During this week:** **Read:** Umar pp 1-5 to 1-20, 6-9 to 6-47 **Watch:** Topics 2.1, 2.2, and 2.3 **Submit:** Answers to Class 2 discussion questions and participation Activity 2. See detailed requirements in BB Assignments. **Due by Noon CST January 23rd**
Week 3 **Jan 23rd**	**Middleware** 3.1 Distributed Architecture 3.2 Distributed Web Security 3.3 Introduction to Middleware	**During this week:** **Read:** Umar pp 7-15 to 7:46 **Watch:** Topics 3.1, 3.2 and 3.3 **Submit:** Answers to Class 3 discussion questions and participation Activity 3. See detailed requirements in BB Assignments. **Due by Noon CST January 30th**
Week 4 **Jan 30th**	**Web Services** 4.1 Introduction to Web Services 4.2 B to B Integration 4.3 ESB and Integration Problems	**During this week:** **Read:** Umar pp 11-2 to 11-25 **Watch:** Topics 4.1 and 4.2 **Submit:** Answers to Class 4 discussion questions and participation Activity 4. See detailed requirements in BB Assignments. **Due by Noon CST February 6th**
Week 5 **Feb 6th**	**Business Process Management / Cloud Computing** 5.1 BPM/Workflow 5.2 Introduction to Cloud Computing	**During this week:** **Read:** Umar pp 2-23 to 2.52 **Watch:** Topics 5.1, 5.2 and 5.3 **Submit: Assignment 1 Part 1 (Part 1 PHP Web Application that consumes REST and SOAP based web services) is due in Blackboard by Saturday 8 AM CST February 11th. As soon as I correct part 1, I will send you an email so you can shut your Amazon virtual machine off.**

Date	Topics and Lectures	Assignments Due
Week 6 Feb 13th	**Portal Technology for Integration** 6.1 Discuss using Portals to integrate systems 6.2 SharePoint and Portal and Web Services 6.3 Overview of **Assignment 1 Part 2** 6.4 Overview of Test 1	**During this week:** **Read:** Umar pp 4-5 to 4-16 **Watch:** Topics 6.1, 6.2 and 6.3 **Submit:** Answers to participation Activity 5. **Due by Noon CST February 20th**
Week 7 Feb 20th	**Service Oriented Architecture (SOA)** 7.1 BPM and SOA part 2	**During this week:** **Read:** Umar pp 9-2 to 9-38 **Watch:** Topics 7.1 and 7.2 **Submit:** Answers to Class 7 discussion questions and participation Activity 6. **Due by Noon CST February 27th**
Week 8 Feb 27th	**Cloud Assignments Overview** 8.1 Introduction to Salesforce and Force.com and **Assignment 2** 8.2 Introduction to Blueworks Live – Business Process Modeling in the Cloud **Assignment 3** 8.3 Overview Assignment 4 – Team Systems Integration Project **First Test this week – Sign up for a time!**	**During this week:** **Read:** Umar pp 9-21 to 9-26 **Watch:** Topics 8.1, 8.2 and 8.3 **Submit: Assignment 1 – Part 2 (Create a web service on your PHP Server and consume it on a Microsoft SharePoint Server). This is due in Blackboard by Saturday 8 AM CST March 3rd. As soon as I correct part 2, I will send you an email so you can shut your Amazon virtual machine off.**
Week 9 March 5th	**Mobile Development Contact Center and Agile Development** 9.1 Mobile Development 9.2 One Premise and Cloud based Contact Centers 9.3 Agile/Scrum Project Management	**During this week:** **Read:** Umar pp 12-25 to 12-38 **Watch:** Topics 9.1 and 9.2 **Submit:** Answers to Class 9 discussion questions and participation Activity 7. See detailed requirements in BB Assignments. **Due by Noon CST March 12th**
Week 10 March 12th	**Business Rule Management Systems and Human Change Management** 10.1 Introduction to Business Rule Management Systems 10.2 Human Change Management	**During this week:** **Read:** None **Watch:** Topics 10.1 and 10.2 **Submit:** Assignment 2 Cloud based workflow **Due by Noon CST March 18th.**
Week 11 March 19th	**Spring Break Week – No Assignments**	**Enjoy the break!**
Week 12 March 26th	**Integrating on premise and cloud based systems** 12.1 Integrating cloud based and on premise systems	**During this week:** **Read:** None **Watch:** Topic 11.1 **Submit:** Assignment 3 Cloud based process design using the BPMN standard **Due by Noon CST April 2nd**
Week 13 April 2nd	**Managing Services and distributed transaction processing** 13.1 Managing Cloud Services 13.2 Distributed Transaction Processing	**During this week:** **Read:** None **Watch:** Topics 12.1 and 12.2 **Submit:** Assignment 4 Milestone 1 **Due by Noon April 9th**
Week 14 April 9th	**Distributed Data Integration** 14.1 Distributed Data Integration	**During this week:** **Read:** Umar pp 13-1 to 13-22 and 13-38 to 13-45 **Watch:** Topic 13.1 **Submit:** Assignment 4 Milestone 2 **Due by Noon April 16th**
Week 15 April 16th	**Performance in Distributed Systems** 15.1 Performance Challenges in Distributed Systems	**During this week:** **Read:** Umar pp 5-37 to 5-48 **Watch:** Topic 15.1 **Submit:** Assignment 4 Milestone 3 **Due by Noon April 23rd**
Week 16 April 23rd	**Present Systems Integration Assign 4** 16.1 Discuss Final Exam	**During this week:** **Read:** None **Watch:** **Submit:** Assignment 4 Milestone Systems Integration Project

		Final Deliverable **Due by Noon April 30th**
Exam Week April 30th	**Final Exam this week. Sign up for a time!**	**Must complete final exam by May 4th**