University of Nebraska Omaha

COURSE:	ISQA 8380 Managing the Distributed Computing Environment
SESSION:	Summer 2012
TIME:	Monday and Wednesday Nights from 6PM to 9:20PM (Due to limited number of sessions, you will also be participating in several self paced session that you can take at your own pace.
PLACE:	PKI 260
INSTRUCTOR:	Dr. George Royce
OFFICE:	Room 367
OFFICE HOURS:	Before or after class by appointment and regularly my hours are 5-6 PM on Friday afternoons and 10-12 Saturday mornings (my website http://roycesite.com/george for any changes in these office hours).
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 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 8310 - Business Data Communications or ISQA 3400 - Business Data Communications or equivalent, AND ISQA 3310 - Managing the Database Environment or ISQA 8050 - Data Organization and Storage or equivalent. Work experience in either of these areas may satisfy the requirement.

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, Methodoly 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
Class discussion, participation in blackboard forums and answers to questions for virtual classes.	80	End of Class
Assignment 1 – Cloud based workflow application integration	80	July 18th
Assignment 2 – PHP web application that consumes a web service connects to a Microsoft SharePoint Server	180	P1 – July 24th P2 – August 4th
Assignment 3 – Cloud Based Business Process Modeling	90	August 6th
Assignment 4 – EFS Systems Integration Group Project	170	August 8th
1st Exam	200	July 25th
2nd Exam	200	August 8th
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-

Class Policies:

Late Assignments: 2% deduction per day late. Assignments will not be accepted after a week late.

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.

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
Class 1 **Monday** **July 2nd**	**Course Introduction** 1.1 Welcome to 4380 course and teacher 1.2 Introduction 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 (also online) 1.6 Introduction to XML **(online only)** 1.7 Introduction to Assignment 1 – (**online only)**	**Due by end of first week of semester:** **Read:** Course Syllabus (posted in Blackboard Course Documents) **Watch:** Topics 1.6, 1.7 **Do:** Register for Amazon Web Services for your PHP web services assignment (assignment 2) and Force.com (assignment 1. Do this before Monday July 9th. **Submit:** Student Information Sheet, Intro to XML Activity, Answers to Class 1 discussion questions and Activity 1- XML Activity **Due by Noon July 9th CST**
Class 2 **Monday** **July 9th**	**Overview of Distributed Systems** 2.1 PHP development and **Overview of Assignment 2** 2.3 Dist. Systems Generations 1 to 5. 2.4 Distributed Architecture 2.5 Distributed Web Security **(online only)**	**During this week:** **Read:** Umar pp 1-5 to 1-20, 6-9 to 6-47 **Watch:** Topics 2.5 **Submit:** Questions on Web Security. **Due by Noon CST July 11th**
Class 3 **Wednesday** **July 11th**	**Middleware and Web Services** 3.1 Introduction to Middleware 3.2 Introduction to Web Services 3.3 B to B Integration **(online only)** 3.4 ESB and Integration Problems	**During this week:** **Read:** Umar pp 7-15 to 7:46 **Watch:** none **Submit:** Questions on B2B Integration : **Due by Noon CST July 16th**

	3.5 Introduction to Assignment 4 the EFS Project	
Class 4 Monday July 16th	**Business Process Management / Cloud Computing** 4.1 One Premise and Cloud based Contact Centers 4.4 **Overview of Assignment 2 Part 2** 4.5 **Overview of Assignment 3 (online only)**	**During this week:** **Read:** Umar pp 11-2 to 11-25 **Watch:** none **Submit: Assignment 1 Due by Noon CST July 18th**
Class 5 Wednesday July 18th	**BPM/SOA and EFS Project** 5.1 Discuss using Portals to integrate systems 5.2 SharePoint and Portal and Web Services 5.2 Overview Assignment 4 – Team Systems Integration Project 5.3 BPM and SOA part 2 5.4 **Overview of Test 1**	**During this week:** **Read:** none **Watch:** none **Submit:**
Date	**Topics and Lectures**	**Assignments Due**
Class 6 Monday July 23rd	**Mobile Development Contact Center and Agile Development** 6.1Introduction to Cloud Computing 6.2 **Test** 1	**During this week:** **Read:** Umar pp 2-23 to 2.52 **Watch:** none **Submit:** . **Assignment 2 Part 1 (Part 1 PHP Web Application that consumes REST and SOAP based web services) is due in Blackboard by 5 PM CST July 24th. As soon as I correct part 1, I will send you an email so you can shut your Amazon virtual machine off.**
Class 7 Wednesday July 25th	**Mobile Development Contact Center and Agile Development** 6.1 Mobile Development 6.3 Agile/Scrum Project Management **(online only)** 7.3 Distributed Data Integration	**During this week:** **Read:** Umar pp 4-5 to 4-16 **Watch:** Topics 6.3 **Submit:** . **Assignment 4, Milestone 1Due by Noon July 30th**.
Class 8 Monday July 30th	**Business Rule Management Systems and Human Change Management** 7.1 Introduction to Business Rule Management Systems 7.2 Human Change Management 7.4 **Overview of Test 2**	**During this week:** **Read:** Umar pp 9-2 to 9-38 **Watch:** none **Submit: Assignment 2 – 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 August 4th at 8 AM CST. As soon as I correct part 2, I will send you an email so you can shut your Amazon virtual machine off.** **Assignment 4, Milestone 2 Due by Noon CST August 1st.**
Class 9 Wednesday August 1st	**Integrating on premise and cloud based systems** 8.1 Integrating cloud based and on premise systems 8.2 Distributed Transaction Processing	**During this week:** **Read:** Umar pp 12-25 to 12-38 **Watch:** Topics 9.1 and 9.2 **Submit**: **Assignment 3 and Assignment 4, Milestone 3 Due by Noon CST August 6th. Be ready to give team presentations on August 6th**
Class 10 Monday August 6th	9.1 Performance Challenges in Distributed Systems 9.2 **Assignment 4 team presentations**	**During this week:** **Read:** none **Watch:** **Submit: Assignment 4 Due by Noon CST August 8th**
Class 11 Wednesday	11.1 **Test 2**	**During this week:** **Read:** None

August 8th		**Watch:** none **Submit:** none