University of Nebraska Omaha

COURSE:	ISQA 4380 Distributed Technologies and Systems
SESSION:	Spring 2010
TIME:	Monday and Wednesday Night from 6PM to 8:40PM
PLACE:	PKI 155 **/** PKI 276
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 9-11 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:

The course introduces students to concepts, issues and tools needed to develop distributed computing systems. Topics include distributed systems architecture, middleware, Internet-based systems development, security and performance. Hands-on systems development using current technologies is provided. The goal of the course is to equip students to make the architecture and infrastructure-related decisions needed for successful development and use of contemporary client/server, RIA and Internet-based systems.

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.
- Understand the role of the transaction processing, object-oriented, Internet-based technologies and rich internet applications in distributed enterprise computing and make decisions about how and when to apply them.
- Understand the factors that contribute to the performance of client/server systems and incorporate this understanding in the design of client/server systems.
- Understand the impact of web services and their standards on distributed computing development and systems integration.
- Develop 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.

Optional Reference (not required for the course but does provide a greater background on Service Oriented Architecture)
Newcomer, Eric and Lomow, Greg, **Understanding SOA and Web Services** 2005. ISBN: 0-321-18086-0

Grading:

Activity	Points	Date Due
Class discussion, participation in blackboard forums and answers to questions for virtual classes.	80	End of Class
Assignment 1 – Middleware Review and Case Study	90	Feb 8th
Assignment 2 – PHP web application that consumes a web service connects to a Microsoft SharePoint Server	190	P1 – Mar 1st P2 – Mar 22nd
Assignment 3 – Cloud based workflow application integration	90	April 12th
Assignment 4 – EFS Systems Integration Group Project	200	April 26th
1st Quarter Exam	175	March 1st
2nd Quarter Exam	175	May 3rd
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 Outline:

Class 1 Monday, January 11th

Topics: Introductions, Review Assignments 1 through 4, Overview of Class, Business Integration model, Application and integration Architecture, Models of Computing, 1st to 4th Generation Computing, Basic Web, Dynamic Web, Introduction to PHP and MySQL

. **Readings:** **UMAR** Pages 1-4 to 1-44

Reminder: **Complete the Student Information Sheet on Blackboard by Wednesday, January 13th**

No School – Martin Luther King Day January 18th

Class 2 **Monday, January 25th**

Topics: Review responsibilities for assignments 3 and 4 and determine teams for assignment 4, XML, Web Services, Tiered Architectures, Introduction to SOA, Business Process Management, Workflow, Business Process Modeling, Business Activity Monitoring, Application Servers, Message Brokers, Messaging, Transaction Servers

Readings: **UMAR** Pages 6-3 to 6-48 and Pages 8-3 to 8-36 and 5-19 to 5-46

Class 3 **Monday, February 1st**

Topics: Web Services, SOAP, WSDL, UDDI, Service Registry, agile methodology, scrum, stories, story points, burn down chart, use case diagram, Iteration, Iteration 0

Readings: **UMAR** Pages 7-2 to 7-18 and 7-27 to 7-48

Class 4 **Monday, February 8th**

Topics: Contact Center Integration, Voice Response Unit, CTI (Computer telephone integration), Automated Call Distribution, contact center, workflow, skill based routing, screen pop, predictive dialer, customer relationship manager software, Agile OAD (overall application design), Release plan, Swim Lane Diagram, process flows, cost benefit analysis, technical costs, capital costs, end user costs, administrative costs, human change management, communication plan, training plan.

Assignment 1 is due in Blackboard drop box by 11 PM

Class 5 **Monday, February 15th**

Topic: Objects, components, encapsulation, messaging, inheritance, polymorphism, application server, COM, COM+, DCOM, .NET, Java, COBRA, J2EE, EJB, ESB (Enterprise Service Bus).Message Broker, webtop, portal, enterprise portal, horizontal enterprise portal, employee portal, externally facing portal, single sign-on, inter-portlet communications, portal content management, jsr-170 standard for unified **content** management.

Reading **UMAR** Pages 7-19 to 7-26

Class 6 **Monday, February 22nd**

Topics: SharePoint Portal, PHP Web services, web part, InfoPath e-form

Readings: **UMAR** Pages 4-5 to 4-15

Class 7 **Monday, March 1st**

First Test

Assignment 2 – Part 1 is due on server and zipped in Blackboard drop box by 11 PM

Class 8 **Monday, March 8th**

Topics: Objects, Components and Services, Service Oriented Architecture – a deeper dive and Business Rule Driven Systems, Software as a Service

Readings: **UMAR** Pages 9-4 to 9-40 and 10-4 to 10-38

No School – Spring Break March 15th

Class 9 **Monday, March 22nd**
Topics: Distributed Data Services, Rich Clients and Web Services Integration
Assignment 2 – Part 2 is due on server and zipped in Blackboard drop box by 11 PM

Class 10 **Monday, March 29th**
Topics: Distributed Transaction Processing, Mobile and Wireless Device and Application Integration.
Readings: **UMAR** Pages 13-3 to 13-43

Class 11 **Monday, April 5th**
Topics: Software as a Service Integration (SaaS) integration

Class 12 **Monday, April 12th**
Topics: Rich Clients and Web Services Integration
Assignment 3 is due on the server and in Blackboard drop box by 11 PM

Class 13 **Monday, April 19th**
Topics: Performance, Acceptance and Load Testing Distributed Systems, In Class Activity, Preparation for Final Exam

Class 14 **Monday, April 26th**
Topics: Standards and Team Presentations / Class Evaluation / Preparation for the test
Assignment 4 is due in Blackboard drop box by 6 PM

Class 15 **Monday, May 3rd**
Topics: **Final Exam**