

# CSE 5234 (Approved): Distributed Enterprise Computing

## Course Description

Current application and middleware frameworks for distributed enterprise computing; XML; Enterprise Java; SOAP and REST web services; AJAX and JSON; enterprise service bus; Hadoop; mobile computing.

**Prior Course Number:** CSE 769

**Transcript Abbreviation:** Distr Enterpr Comp

**Grading Plan:** Letter Grade

**Course Deliveries:** Classroom

**Course Levels:** Undergrad, Graduate

**Student Ranks:** Senior, Masters, Doctoral

**Course Offerings:** Spring

**Flex Scheduled Course:** Never

**Course Frequency:** Every Year

**Course Length:** 14 Week

**Credits:** 3.0

**Repeatable:** No

**Time Distribution:** 3.0 hr Lec

**Expected out-of-class hours per week:** 6.0

**Graded Component:** Lecture

**Credit by Examination:** No

**Admission Condition:** No

**Off Campus:** Never

**Campus Locations:** Columbus

**Prerequisites and Co-requisites:** CSE 3431 or CSE 5431 or CSE 660

**Exclusions:** Not open to students with credit for CSE 769

**Cross-Listings:**

**The course is required for this unit's degrees, majors, and/or minors:** No

**The course is a GEC:** No

**The course is an elective (for this or other units) or is a service course for other units:** Yes

**Subject/CIP Code:** 14.0901

**Subsidy Level:** Doctoral Course

## Programs

Abbreviation	Description
BS CSE	BS Computer Science and Engineering
MS CSE	MS Computer Science and Engineering
PhD CSE	PhD Computer Science and Engineering

## Course Goals

Be competent with the technologies of enterprise computing that are most important in the software industry.
Be competent with the advantages of architectures, specifically three tier architectures over two tier architectures.
Be competent with how to build scalable distributed systems.
Be competent with standards in describing data.
Be familiar with how to apply enterprise computing to scientific problems.
Be familiar with the importance of distributed computing through hands on experience.

Be familiar with the issues involved in enterprise mission critical applications.

## Course Topics

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Introduction to Distributed Enterprise Systems	1.0							
Overview of the technologies used for distributed enterprise systems	2.0							
XML	3.0							
Javascript, AJAX and JSON	4.0							
Object-relational mapping (ORM)	4.0							
Enterprise Java	4.0							
Designing enterprise applications	3.0							
SOAP and REST Web Services	4.0							
Enterprise integration via the Enterprise Service Bus	4.0							
Cloud computing toolkits	4.0							
Mobile and edge computing	4.0							
High-volume computing on mainframe computers	4.0							

## Representative Assignments

A small-team project to implement a small integrated enterprise application using the technologies covered in lecture.

## Grades

Aspect	Percent
Midterm	20%
Term Paper	10%
Project	40%
Final Exam	30%

## Representative Textbooks and Other Course Materials

Title	Author
<i>XML &amp; Related Technologies</i>	Atul Kahate
<i>Effective Enterprise Java</i>	Ted Neward
<i>Service Oriented Java Business Integration: Enterprise Service Bus integration solutions for Java developers</i>	Binildas A. Christudas
<i>Mobile Applications: Architecture, Design, and Development</i>	Valentino Lee; Heather Schneider; Robbie Schell
<i>Introduction to the New Mainframe: z/OS Basics</i>	Mike Ebbers; John Kettner; Wayne O'Brien; Bill Ogden; Rama Ayyar; Myriam Duhamel; Per Fremstad; Luis Martinez Fuentes; Miriam Gelinski; Michael Grossmann; Olegario Hernandez; Roberto Yuiti Hiratzuka; Georg Mller; Rod Neufeld; Paul Newton; Bill Seubert; H

## ABET-EAC Criterion 3 Outcomes

Course Contribution		College Outcome
*	a	An ability to apply knowledge of mathematics, science, and engineering.
*	b	An ability to design and conduct experiments, as well as to analyze and interpret data.
**	c	An ability to design a system, component, or process to meet desired needs.
	d	An ability to function on multi-disciplinary teams.
**	e	An ability to identify, formulate, and solve engineering problems.
*	f	An understanding of professional and ethical responsibility.
	g	An ability to communicate effectively.
*	h	The broad education necessary to understand the impact of engineering solutions in a global and societal context.
*	i	A recognition of the need for, and an ability to engage in life-long learning.
*	j	A knowledge of contemporary issues.
**	k	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

## BS CSE Program Outcomes

Course Contribution		Program Outcome
***	a	an ability to apply knowledge of computing, mathematics including discrete mathematics as well as probability and statistics, science, and engineering;
*	b	an ability to design and conduct experiments, as well as to analyze and interpret data;
***	c	an ability to design, implement, and evaluate a software or a software/hardware system, component, or process to meet desired needs within realistic constraints such as memory, runtime efficiency, as well as appropriate constraints related to economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability considerations;
	d	an ability to function on multi-disciplinary teams;
***	e	an ability to identify, formulate, and solve engineering problems;
	f	an understanding of professional, ethical, legal, security and social issues and responsibilities;
	g	an ability to communicate effectively with a range of audiences;
	h	an ability to analyze the local and global impact of computing on individuals, organizations, and society;
*	i	a recognition of the need for, and an ability to engage in life-long learning and continuing professional development;
*	j	a knowledge of contemporary issues;
***	k	an ability to use the techniques, skills, and modern engineering tools necessary for practice as a CSE professional;
*	l	an ability to analyze a problem, and identify and define the computing requirements appropriate to its solution;
**	m	an ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices;
**	n	an ability to apply design and development principles in the construction of software systems of varying complexity.

## Additional Notes or Comments

This is a course introducing current application and middleware technologies for distributed enterprise computing. Technologies include XML, JavaScript, Ajax, Flex, Enterprise Java, Web Services, an Enterprise Service Bus and emerging cloud computing toolkits. The objective of this course is to learn about current technologies in distributed enterprise computing and apply them in small projects in a disciplined

manner. The class is organized into teams of two people each. The same projects are assigned to each team. Teams must develop and apply an appropriate software design methodology to the project. They are expected to meet outside the usual class periods for the project and maintain and present the project workbook in electronic form on the Web. Maintenance of the work-products on the web site is part of the class project, and their work-products on the web site are electronically archived at the end of the course.

The projects are intended to be small application components that build on each other to finally create a complete application.

**Prepared by: Rajiv Ramnath**