COP 4910: Frontiers in IT (Spring 2002)

Semester:	Spring 2002
Course Number:	COP 4910, Section 1
Instructor:	Dr. Denver Williams
Office:	ENGR 440
Class Time:	Monday, Wednesday, Friday 1:00 – 1:50 pm
Class Rooms:	Lecture: CBS 221
Office Hours:	Friday 1:00 - 1:50. Also by appointment.
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Prerequisites and Co-requisites

There are no prerequisite for this class.

Course Objectives

The major objective of the course is to facilitate the development of students in conducting real-world projects in the IT arena. All the major facets of a project will be explored. These include the following:

1. Problem specification/identification
2. Development of proposal
3. Project Planning and scheduling
4. Reading related papers
5. Performing research
6. Performing experiments
7. Performing analysis or building simulation models
8. Drawing conclusion
9. Making presentations

Course Outline and Organization

This course is envisioned as a project class in which students will choose a frontier area in information technology and conduct a thorough study of the area. Some areas are emerging technology and will be suitable for the development of prototypes or proof concept applications. A number of different areas of information technology will be introduced as a springboard and to stimulate interests.

The study should clearly address the capabilities of the technology and its applicability to address business problems along, but not limited to the following dimensions:

- Disruptive or Industry Transforming
- New growth
- Improved efficiency of current operations
- Creation of new markets and revenue capability to the enterprise

Providing that the work is at a high enough standard, we would have a special session in which the best 3 or so presentations would be made to the industry advisory board. (Oh yes, a recruiting opportunity)

Possible Topics
A number of topic areas will also be provided for the student to choose from.

1. Tuple Space Implementations:
Comparison of tuple space implementations (TSpaces, JavaSpaces and GigaSpaces). This requires prototypes to highlight differences in ways of achieving certain communication/coordination tasks, and to compare performances.

2. Voice over IP
This is probably more of a term paper, although I think comparisons of some implementations should be required.

3. Media APIs
Comparison of JMF (Java Media Framework) to QT Java (QuickTime for Java). As in the tuple spaces, one could do prototypes to compare performance over standard codecs. Some issues would be breadth of codecs supported and the degree of control over streaming media.

4. Security
Here I'm thinking about a paper that deals with issues all the way from checking .class files to be sure they haven't been messed with, to encrypted data, to JSSE (Java Secure Socket Extension), to JCE (Java Cryptography Extension), to symmetric versus asymmetric schemes. They can do some prototype work in Java.

5. Web Content
This could be very broad, including topics like:

- Java3D
- Servlet and JSP technologies
- Flash animation (the scripting language)
- Multilinear storytelling on the web
- Web Game Engines

In each case, we would want a paper and prototype uses.

6. P2P
A careful comparison of Napster, Gnutella, Kazaa (Morpheus), FreeNet and JXTA technologies could be a real challenge.

7. The Wireless Web, also Appliances
This could range from 3G technologies to BlueTooth to God knows where. Also, one could study and prototype applications using Sun's MidLets, IBM's Modal, J2ME CLDC, Java KVM, or even technologies for Smart Cards. It's certainly a hot, at the edge topic.

8. Jini
Study of Jini as an ORB, including a variety of prototypes.

9. Extending the reach of the enterprise with WAP and the J2ME platform

10. Tuple Space as a Computational Model - Redefining the paradigm of man/machine interaction.

11. The TeraGrid: High Performance Computing and the Next Generation Internet

12. Component Oriented Software: Beyond Object Orientation

13. Distributed Object Model based on CORBA and Java.

14. Extended the Object Paradigm with Process Orientation

15. Extending the Management and Reliability of business software with SNMP or GDMO MIB technology

16. Microsoft COM/COM+/DCOM object models as a competitor to the CORBA OMA by the OMG.

17. Microsoft Dot Net Architecture and the C# Programming Language

18. Adaptive software architecture and business process orientation

19. Evolutionary Software Interface: XML over IIOP or RMI as a semantic interface

Grading (Work in progress)

Grading in general will be based on the quality of the project. Some of the areas that I would like to take into account include the following:

- Innovative application of the technology to solving business problem
- Formulation of the technology as a disruptive technology along with the identification of an emerging market space
- Use of the technology to facilitate improved automation and operational efficiency in modern businesses

Grade	**Accumulated Percentages**
A	90-100
B	80-89
C	70-79
D	60-69
F	0-59

Class Schedule

	Date	Activity	Description
Day1	01/07/2002	Lecture	
Day2	01/09/2001	Lecture	
Day3	01/14/2002	Lecture	
Day4	01/16/2002	Lecture	Problem Selection
	01/21/2002	***Holiday***	***Martin Luther King Jr. Day***
Day5	01/23/2002	Lecture	
Day6	01/28/2002	Lecture	
Day7	01/30/2002	Lecture	Proposal Due
Day8	02/04/2002	Lecture	
Day9	02/06/2002	Lecture	
Day10	02/11/2002	Lecture	
Day11	02/13/2002	Lecture	
Day12	02/18/2002	Lecture	
Day13	***02/20/2002***	***Lecture***	
Day14	02/25/2002	Lecture	
Day15	02/27/2002	Lecture	Project Report - Presentations
Day16	03/04/2002	Lecture	
Day17	03/06/2002	Lecture	
	03/11/2002	***Holiday***	***Spring Break***
Day18	03/18/2002	Lecture	
Day19	03/20/2002	Lecture	
Day20	03/25/2002	Lecture	
Day21	03/27/2002	Lecture	
Day22	***04/01/2002***	***Lecture***	
	04/03/2002	***Holiday***	***Founder's Day Honors Convocation***
Day23	04/08/2002	Lecture	
Day24	04/10/2002	Lecture	Final Presentations
Day25	04/15/2002	Lecture	Final Presentations
Day26	04/17/2002	Lecture	Final Presentations
Day27	***04/22/2002***	***Lecture***	***Selected Presentations***
Day28		***Project Due***	***Last Day for Projects to be Turned in***

Important Date
03/01/2002 Withdrawal Deadline