CptS 464/564 Syllabus

Distributed Systems Concepts and Programming

Fall, 2004

TTh 2:50-4:05PM

Pullman Murrow 53

WHETS TV in WSU Tri Cities Room 256-West

WHETS TV in Vancouver Room 116

http://www.eecs.wsu.edu/~hauser/CS564

version 2, August 20, 2004

Instructor: Prof. Carl Hauser

Office: EME 53; **Office phone:** 335-6470; **E-mail:** hauser@eecs.wsu.edu

Office Hours: 4:00-5:00 Monday and Wednesday – or email me for an appointment – I'm happy to see you at other times. Students at the WHETS sites should feel free to call during office hours or make an appointment for me to call you. I will travel to Tri-Cities at least twice during the semester and hold office hours there after class. I will also arrange occasional office hours via WHETS for Vancouver students. Come to Prof. Hauser with general course questions, to the TA with program assignment details and debugging issues.

TA: Harald Gjermundrod

Office: ETRL 204; **Office Phone:** 335-7334; **E-mail:** harald@wsu.edu

TA Office Hours (in ETRL 301): None scheduled, yet; we will have some associated with each assigned programming project.

Tri Cities WHETS Contact: Aaron Brumbaugh, Media Services Manager,

Phone: 509-372-7284, **E-mail:** brumbau@tricity.wsu.edu

Vancouver WHETS Contact: Chris Rhoads

Phone: 360-546-9709, **E-mail:** rhoads@vancouver.wsu.edu

Web page: http://www.eecs.wsu.edu/~hauser/CS564/

Lecture notes, assignments, and other reading will be posted as PDF files. I will not, as a rule, provide hardcopy handouts of the notes. You are expected to take your own notes during class.

Mailing List:

I will maintain a mailing list of students in the class. Clarifications about projects and homework and other announcements may be sent to the list between class sessions. You will be held responsible for the content of these messages so please make sure that the e-mail address you give me is one that works reliably and that you read regularly.

Lab space: ETRL 301, the SNIF Lab

Your EECS computer account is used to login to these computers. The door code for the lab is available on-line from https://helpdesk.eecs.wsu.edu. Students at WHETS sites will need to login remotely to these machines to do the projects. Contact the TA for assistance in obtaining a Pullman EECS account.

1) Background

The last few years have seen a significant number of advances in computer and communications technologies, as well as the sharp decline in their cost. These developments, coupled with the growing ubiquity of network and internet connections, have resulted in the huge growth in the size

and diversity of computer programs, which are executed across multiple computers. The most familiar examples use the World Wide Web (WWW) but other examples abound.

This course will examine the state of the art and practice in distributed systems and will provide significant experience in programming them.

2) Course Objectives

As a result of this course, students will:

- Be well-versed in the fundamental issues involved in designing, programming, and using distributed systems
- Be familiar with some of the most significant new software technologies for creating distributed programs
- Have significant experience using CORBA, a standard, cross-platform software framework for creating distributed programs.

3) Text

a) Required Text:

Verissímo, Paulo and Rodrigues, Luís. *Distributed Systems for System Architects,* Kluwer Academic Publishers, 2001, ISBN 0-7923-7266-2.

b) Optional Texts:

Van Steen, Martin and Tanenbaum, Andrew S. *Distributed Systems: Principles and Paradigms.* Prentice Hall, 2002, ISBN: 0130888931.

Iona Software. *Orbacus Manual.* A few copies will be available in the lab. You'll be able to get your own hardcopy at Cougar Copies in the Cub for about $10, or download a PDF file from the class web page.

4) Additional Reading

Additional papers will be either handed out, linked to the web page, or both.

5) Course Prerequisites

Cpt. S. 360 (Systems Programming), or permission from the instructor. Also ***fluency and significant experience*** in C++ or Java. If you do not meet these prerequisites, you MUST come and talk with me the first week of class. I reserve the right to drop you from the course if it becomes obvious that you do not meet the prerequisites.

6) Course Requirements

You are *required* to attend every lecture. If you miss one, it is *your* responsibility to find out what happened and to collect any material that was handed out in class. Videotapes of the lectures will be usually be available at the WHETS control room in Murrow 54 (and at the WHETS control rooms in Vancouver and Tri Cities) for a few days following each lecture. You are also expected to participate in class discussions. This aids your learning and that of your classmates, and provides valuable feedback on the lecture. I reserve the right to lower the grade of any student who is markedly deficient in attendance and/or participation.

I expect ***you*** to ***own*** your degree of success in this class. *And,* I expect you to contribute to the success of others. Examples:

1. If a lecture point is unclear, ask a question, either in class, during office hours or by e-mail. You are probably not alone in your confusion. I enjoy engaging in technical conversations with students with the goal of helping them create an accurate understanding of course material. Participating in such conversations is very favorable for your class participation grade. *I hate talking about grades and how you can get a better one.*

2. If another student is confused, help him or her out.

3. If I am systematically doing something that inhibits your learning, tell me.

7) Assigned Work and Tentative Grading Policy

There will be one mid-term exam and one final examination; the final exam will only cover the material discussed and assigned after the first exam. There will be three-five homework assignments given out. There will be four programming projects, all involving C++ or Java and CORBA.

The following allocation of grade percentages is *tentative*, and may change during the semester:

Component	564
Exams (2):	45%
Homeworks (3-5) and Surprise Quizzes :	10%
Projects (4):	45%

In order to receive a grade higher than C- for the course, you must achieve an average grade of at least C on the exams ***and*** an average grade of at least C on the projects.

564 students will be given additional material to read, as well as additional homework, programming requirements, and exam questions. Accordingly, 464 and 564 will be graded on separate scales.

8) Policies and Expectations

a) Do your own work

Your exams, homeworks, and programming projects are subject to the academic honor code. **DO NOT CHEAT IN ANY WAY: *DO YOUR OWN WORK!*** Side effects of cheating may involve expulsion, revocation of assistantships, etc., not to mention eliminating any chance of your *ever* working with me.

It is quite acceptable to ask others things like "Have you gotten this exception before?," and even have them look at your stack trace and its code It is quite unacceptable, on the other hand, to have them spend hours helping develop or seriously rearrange your program's logic. And, of course, it is unacceptable for two or more people to collaboratively develop the solution for a project.

If you are tempted to collaborate on projects, **DON'T!**

b) Responsibility for learning

1. I expect you to demonstrate critical thinking across the spectrum of course work. Adaptations of the WSU Critical Thinking Rubric will be used in grading some of the projects and homework.

2. I expect you to cooperate with other students and to pull your share in class discussions. Respect that different people in your group may have different ways of learning and different strengths. Seek ways of taking advantage of those differences.

3. I expect you to engage in *active learning*: speak up when you don't understand, question assumptions, relate course material to your experience outside class, seek out additional

experience and reading related to the class. *You* must *construct* your understanding of the material.

4. I expect you to promptly review feedback you receive from me, the TA, or other students; to actively clarify the feedback if the material is still unclear; and to incorporate the feedback in your future work.

5. I expect you to spend adequate time on the course. Adequate time includes getting enough rest so that time you spend on course tasks is well-spent time. Adequate time includes proofreading and reviewing your assignments before you hand them in.

6. I expect you to have high expectations of yourself: set goals for yourself and try to do your very best. Consciously think about the balance between what you do to earn a grade and what you do to learn. (If I'm doing something that puts these in opposition to each other *please* let me know.)

7. You are expected to know and observe the WSU Academic Integrity Standards and the EECS Academic Integrity Policy. Copying of other students' work, working together on individual assignments, plagiarism of published sources and other forms of academic dishonesty will result in zero credit on the assignment for all students involved and a lower grade in the class. A second offense (across the University) will result in an automatic F in the course and exposes the violator to University sanctions up to and including expulsion. All offenses will be reported to Student Affairs.

c) Accommodations for disabilities

Reasonable accommodations are available for students who have a documented disability. Please notify me during the first week of class of any accommodations needed for the course. Late notification may cause the requested accommodations to be unavailable. All accommodations must be approved through the Disability Resource Center (DRC) in Administration Annex room 205, 335-1566, mailto:drc@mail.wsu.edu.

d) Advice

1. Don't wait until the last minute to do homework or projects. The lab gets busy, computers break down, and people get sick. These are not sufficient excuses for an extension.

2. Save early; save often!

3. Come see me if you are confused. Don't wait for office hours -- send email.

4. Come see me anyway. I'd like to know more about you.

5. If you have trouble with spelling and grammar, get and use a word processor that has spelling and grammar flagging. Your writing for this class should be of professional quality.

9) Tentative Schedule

#	Day	Topic	Text	HW	Project
1	8/24	Introduction and Overview of DSs	Slides		
2	8/26	DS Foundations	1		
3	8/31	DS Foundations (cont.); Middleware overview	1	**1 out**	
4	9/2	CORBA-I (Basics)	Slides		
5	9/7	CORBA-II (Basics) & Project 1	Slides	**1 due**	**1 out**
6	9/9	DS Paradigms	2.1, 2.2		
7	9/14	DS Paradigms (cont.)	2.3, 2.4		
8	9/16	DS Paradigms (cont.)	2.5, 2.6		
9	9/21	DS Paradigms (cont.)	2.7		**1 due**
10	9/23	DS Paradigms (cont.)	2.8	**2 out**	
11	9/28	Project 2 discussion, CORBA smart proxies etc.	handout		**2 out**
12	9/30	DS Paradigms (cont.)	2.9?		
13	10/5	Models of DC	3	**2 due**	
14	10/7	Models of DC (cont.)	3		
15	10/12	Models of DC (cont.)	3		
16	10/14	**MIDTERM EXAM**			
17	10/19	Go over midterm; DSs & Platforms	4	**3 out**	**2 due**
18	10/21	DSs & Platforms	4		
19	10/26	CORBA-III	Slides		
20	10/28	CORBA ANY, Event Services & Project 3	Slides		**3 out**
21	11/2	Real Time DSs	11	**3 due**	
22	11/4	Real Time DSs	12		
23	11/9	Project 4 discussion	Slides		**3 due** **4 out**
	11/11	Veterans' Day Holiday			
24	11/16	Real Time DSs	12		
25	11/18	Security	16	**4 out**	
	11/23	Thanksgiving Holiday			
	11/25	Thanksgiving Holiday			
26	11/30	Security (cont.)	16		
27	12/2	Peer to Peer & Overlay Networks	Papers		
28	12/7	Global Naming Service	Video		
29	12/9	Overlay Networks (cont.); Review for final	Papers	**4 due**	**4 due**
	12/16	**Thursday: FINAL EXAM 10:10-12:10,** Regular Rooms			

Student Survey (complete and return to instructor or WHETS Operator)
Your NAME _____

a) Which courses (or their equivalents at other schools) have you taken?

WSU #	What	Taken before	Taking Now	Not taken ever
CS 360	Systems Programming			
CS 460	Operating Systems			
CS 455	Intro Networks			
CS 555	Comp. Comm. Net			
CS 557	Advanced Networks			
CS 560	Operating Systems			
EE 414	Digital Systems Design			
CS 425	Network Security			
CS 427/527	Computer Security			
CS 451/551	Database Systems			
CS 461	Embedded Systems			

b) What is your Major and what category of student are you:

	CptS	Cpt Eng	EE	ME	Other(list)
Undergraduate					
Graduate					

c) What experience do you have with these different languages and environments?

What	0	1	2	3	4	5
C++						
Java						
LISP						
Ada						
DCOM/COM+						
.NET						
Microsoft OLE						
Microsoft Programming environments (Visual C++/J++, etc)						
Linux						
Windows NT or Windows 2000						
Other (specify):						

0 == none or vague familiarity; 1 == played with it a little; 2 == used in 1-2 courses; 3 == used in lots of courses, and am one of the best at it among my peers; 4 == used for years and a local guru; 5 == top 1000 in the US in it.