Course Syllabus

Jump to Today ✎ Edit

Schedule

Week	Activity	Video Length	Date Due	Notes
1	OS Refresher	2h, 18min	Friday Jan 22	(Optional) Students who need a refre on AOS topics should take course
1	Lesson 1: Intro to AOS	46min	Friday Jan 22	
2	Homework		Monday Jan 25 (11:59 PM EST)	(1 week)
2	Pre-lab		Monday Jan 25 (11:59 PM EST)	(1 week)
2	Lesson 2: OS Structures	2h, 40min	Friday Jan 29	
3	Lesson 3: Virtualization	1h, 53min	Friday Feb 5	
4-5	Lesson 4: Parallel Systems	5h, 34min	Friday Feb 12/ Feb 19	This is the last lesson that be included in the Test 1.

5	Project1: Virtual Machine Scheduling in KVM		Monday Feb 22 (11:55 PM EST)	(3 weeks)
6-7	Lesson 5: Distributed Systems	3h, 20min	Friday Feb 26/ March 5	
7	Test 1		Feb 26 - March 1	from Midnight Friday to Midnight Monday Lesson 1-4
8	Lesson 6: Distributed Objects and Middleware	1h, 56min	Friday March 12	
9	Project 2: Barrier Synchronization		Monday March 15 (11:55 PM EST)	(3 weeks)
9-10	Lesson 7: Distributed Subsystems	3h, 48min	Friday March 19/ March 26	
11	Lesson 9: Internet Computing	2h, 34min	Friday April 2	
11	Project 3: Distributed Service using GRPC		Monday April 5 (11:55 PM EST)	(3 weeks)
12	Test 2		April 9 - April 12	Lessons 5-7
12	Lesson 10: RT and Multimedia	1h, 15min	Friday April 9	
13	Lesson 8: Failures and Recovery	1h, 58min	Friday April 16	
14	Lesson 11: Security	1h, 17min	Friday April 23	

15	Project 4: Implement MapReduce Framework		Monday April 26 (11:55 PM EST)	(3 weeks)
16	Final Exam		April 30 (11: 55 PM EST) to Map 3(11:55 PM EST)	from Midnight Friday to Midnight Monday Lessons 8-11

Reading Lis

Lecture	Pape
Lesson 2: OS Structures	1. Brian Bershad et al., "Extensibility, Safety and Performance in the SPIN Operating System Principles, December 1995. 2. Dawson R. Engler, Frans Kaashoek and James O'Toole, "Exokernel: An Management ", Proceedings of the 15th ACM Symposium on Operating 3. J. Liedtke, " On Micro-Kernel Construction ", Proceedings of the 15th AC 4. J. Liedtke, "Improved Address-Space Switching on Pentium Processors Report No. 933, November 1995 **(self-study)**.
Lesson 3: Virtualization	1. Paul Barham, Boris Dragovic, Keir Fraser, Steven Hand, Tim Harris, Ale Virtualization ", SOSP 2003. 2. Carl Waldspurger, “Memory Resource Management in VMware ESX Se
Lesson 4: Parallel Systems	1. Mellor-Crummey, J. M. and Scott, M., "Algorithms for Scalable Synchror Computer Systems, Feb. 1991. 2. B. N. Bershad, T. E. Anderson, E. D. Lazowska, and H. M. Levy. Light Systems, 8(1):37--55, Feb. 1990. 3. **(partial reading: skip system modeling)** M.S. Squillante and E.D. L Memory Multiprocessor Scheduling ", IEEE Transactions on Parallel and 4. Alexandra Fedorova, Margo Seltzer, Christopher Small and Daniel Nu Implications for Operating System Design. Usenix 05. 5. Ben Gamsa, Orran Krieger, Jonathan Appavoo, and Michael Stumm

	5. Ben-Yehuda, Orran Krieger, Jonathan Appavoo, and Michael Stumm, Multiprocessor Operating System , 1999 Symposium on Operating Syst 6. **(partial reading: Sec 1, 2, 3, and 10)** S. Boyd-Wickizer, H. Chen, R. Many Cores", OSDI 2008. 7. **(partial reading: Sec 1, 2, 3, and 8)** Kinshuk Govil, Dan Teodosiu, Yo management using virtual clusters on shared-memory multiprocessors. 1999.
Lesson 5: Distributed Systems	1. Lamport, L., " Time, Clocks, and the Ordering of Events in a Distributed 2. C.A. Thekkath and H.M. Levy, " Limits to Low-Latency Communications May 1993. 3. Hutchinson N.C., Peterson, L.L., " The x-Kernel: An Architecture for Imp Engineering, 17, 1, pgs. 64-76, January 1991. 4. David Wetherall, " Active Networks: Vision and Reality: Lessons from a Principles, OS Review, Volume 33, Number 5, Dec. 1999. 5. Liu, Kreitz, van Renesse, Hickey, Hayden, Birman, Constable, "Building ", 17th ACM Symposium on Operating System Principles, OS Review, V 6. **(partial reading)** Schroeder, M., and Burrows, M., " Performance of the Operating Systems Principles, pgs. 83- 90, December 1989.
Lesson 6: Distributed Objects and Middleware	1. Mitchell, J. G., et al., " An Overview of the Spring System ", Proceedings 2. Hamilton, G., Powell, M.L., and Mitchell, J.J., "Subcontract: A Flexible B SOSP, pgs. 69-79, December 1993. 3. Wollrath, A., Riggs, R., and Waldo, J., "A Distributed Object Model for th and Systems, May 1996. 4. Emmanuel Cecchet, Julie Marguerite, Willy Zwaenepoel, "Performance SIGPLAN conference on Object- oriented programming, systems, langu

Lesson 7: Distributed Subsystems	1. Feeley, Morgan, Pighin, Karlin, Levy, Thekkath,, "Implementing Global M Symposium on Operating System Principles, Dec. 1995. 2. C. Amza, A. Cox, S Dwarkadas, P Keleher, H Lu, R. Rajamony, W. Yu Networks of Workstations " IEEE Computer, February, 1996. 3. Anderson, T. et al., " Serverless Network File System ", ACM Transpacti 4. (partial reading) Mahadev Satyanarayanan, "Coda: A Highly Available F Computers, vol 39, no 4, Apr 1990
Lesson 8: Failures and Recovery	1. Satyanarayanan, M., et al., " Lightweight Recoverable Virtual Memory ", System Principles, pgs. 146- 160, December 1993. 2. David E. Lowell and Peter M. Chen, " Free Transactions With Rio Vista Principles, October 1997. 3. R. Haskin et. al., " Recovery Management in QuickSilver ", ACM Transa 4. **(read on your own)** J. N. Gray, P. McJones, M. W. Blasgen, R. A. Lorie of a Data Management System ", ACM Computing Surveys, Vol. 13, No 5. **(partial reading: first 3 sections of the paper)** D. Porter, O. Hofmann, SOSP'09. 6. **(partial reading)** D. Peng, F. Dabek, "Large-scale Incremental Processi
Lesson 9: Internet Computing	1. Dean, J., and Ghemawat, S. "MapReduce: Simplified Data Processing c 2. **(partial reading)** Brewer, E. "Lessons from Giant-Scale Services" . 3. **(partial reading)** Luis Andre Barroso, Jeffrey Dean, Urs Holzle, " Web S 4. Freedman, M., Freudenthal, E., and Mazières, D. "Democratizing conter 5. G. DeCandia, D. Hastorun, et. al., "Dynamo: Amazon's Highly Available 6. **(read on your own for learning about Web Technologies)** (2 short pa 1. Curbera, F., Duftler, M., Khalaf, R., Nagy, W., Mukhi, N., Weerawarar WSDL, and UDDI ", IEEE Internet Computing, Volume: 6 Issue: 2, M 2. Curbera, F., Khalaf, R., Mukhi, N., Tai, S., Weerawarana, S., " The N Issue 10 ,October 2003, pgs. 29-34.
Lesson 10: RT and Multimedia	1. Ashvin Goel, Luca Abeni, Charles Krasic, Jim Snow, Jonathan Walpole, 2002. 2. T. Broomhead, L. Cremean, J. Ridoux, D. Veitch, "Virtualize Everything 3. David Hilley and Umakishore Ramachandran, Persistent Temporal Strea Urbana Champaign, Illinois, USA , November 30 - December 4, 2009. 4. Shahabi, Zimmermann, Fu, and Yao. "Yima: A Second-Generation Cont
Lesson 11: Security	1. Saltzer, J.H. and Schroeder, M.D., " Protection and the Control of Inform 1308, Sept. 1975. 2. M. Satyanarayanan, " Integrating Security in Large Scale Distributed Sy

Grade Distribution (under construction)

Pre-lab: 2%

Homework 0: 3%

Project 1: 12% (This project has to be done individually)

(Note: Projects 2-4 can be done in groups of 2. It is your own res logistics of working together. The teaching team will not arbitrat etc.). Our assumption is that both partners contribute equally to teams to verify that the project was done with full participation b

You can choose to do the projects on your own as well without a doing it by yourself as opposed to doing it with a partner.)

Project 2: 12%

Project 3: 12%

Project 4: 12%

Piazza Participation: 3% (Provide answers to peer questions; Ask questions; Work out p Piazza in the following categories: "views", "contributions", "questions", "answers". The e students are savvy enough to know which would count for more!
Homework assignment (on required background): 3%
Two paper summaries: 2% (Students sign up on the Wiki and choose two papers to write
Test 1: 16%

Test 2: 14%

Test 3: 12 %

The exams will be conducted using Honorlock. You are allowed ONE sheet of BLANK SC to show both sides of the paper to the webcam before starting the exam.

Extra Credit:

- Video Hangout attendance: 0.5% if at least 10 appearances through the semester for t
- We recognize that due to time zone differences it may not be possible for some of you

assignment" worth 0.5% for students who cannot attend the hangouts on Tuesdays.

- You are to summarize any 10 hangout recordings.
- Each summary should not be more than a page.
- You must aggregate all 10 summaries in a single pdf document and upload it.
- Note: You can eligible for this extra credit option ONLY if you are unable to attend hangouts and m

- CIOS completion rate at the end of the semester if it exceeds 95% everyone will get 1%

Course Summary:

Date	Details	
Thu Jan 21, 2021	Diagnostic (https://gatech.instructure.com/courses/159706/assignments/625652)	due by 11:59pm
	[Proctoring]Step 6: On-boarding Quiz (https://gatech.instructure.com/courses/159706/assignments/625666)	
	BlueJeans Meeting: CS 6210-Combined (OMS CS and OMS Cyber Security) Weekly Hangout - Tuesday Feb 11 (https://gatech.instructure.com/calendar?event_id=1521603&include_contexts=course_159706)	
	Final (https://gatech.instructure.com/courses/159706/assignments/625632)	
	Hangout Summaries (https://gatech.instructure.com/courses/159706/assignments/625654)	
	Homework 0 (https://gatech.instructure.com/courses/159706/assignments/625656)	
	Midterm (https://gatech.instructure.com/courses/159706/assignments/625630)	

Date	Details
	Paper Summaries - Instructor Use Only (https://gatech.instructure.com/courses/159706/assignments/625658)
	Piazza Participation - Instructor Use Only (https://gatech.instructure.com/courses/159706/assignments/625660)
	Practice Quiz (https://gatech.instructure.com/courses/159706/assignments/625662)
	Pre-Lab (https://gatech.instructure.com/courses/159706/assignments/625664)
	Project 1 (https://gatech.instructure.com/courses/159706/assignments/625668)
	Project 1 - One Time Forgiveness Policy (https://gatech.instructure.com/courses/159706/assignments/625670)
	Project 2 (https://gatech.instructure.com/courses/159706/assignments/625672)
	Project 2 - One Time Forgiveness Policy (https://gatech.instructure.com/courses/159706/assignments/625674)
	Project 3 (https://gatech.instructure.com/courses/159706/assignments/625676)
	Project 3: One Time Forgiveness Policy (https://gatech.instructure.com/courses/159706/assignments/625678)
	Project 4 (https://gatech.instructure.com/courses/159706/assignments/625680)
	Project 4: One Time Forgiveness (https://gatech.instructure.com/courses/159706/assignments/625682)

Date	Details
	Step 1: Let's Get Started (Section: O01) (https://gatech.instructure.com/courses/159706/assignments/625684)
	Step 1: Let's Get Started (Section: OCY) (https://gatech.instructure.com/courses/159706/assignments/625686)
	Step 2: Course Activities & Locations (Section: O01) (https://gatech.instructure.com/courses/159706/assignments/625688)
	Step 2: Course Activities & Locations (Section: OCY) (https://gatech.instructure.com/courses/159706/assignments/625690)
	Test 1 (https://gatech.instructure.com/courses/159706/assignments/681944)
	Test 2 (https://gatech.instructure.com/courses/159706/assignments/681992)
	Test 3 (https://gatech.instructure.com/courses/159706/assignments/681994)
	Video Hangout Attendance (Extra Credit) (https://gatech.instructure.com/courses/159706/assignments/625692)
	Video Lectures & Lessons (Section O01: Udacity) (https://gatech.instructure.com/courses/159706/assignments/625694)
	Video Lectures & Lessons (Section OCY: edX) (https://gatech.instructure.com/courses/159706/assignments/625696)