Course Schedule, Final Version

September:

Class 1: Thursday, Sept. 5. Nancy Lynch
Introduction to the course. Shared memory algorithms: Mutual exclusion.
*** Lamport. A fast mutual exclusion algorithm
*** Friedberg, Peterson. An efficient solution to the mutual exclusion algorithm using weak semaphores.

Class 2: Tuesday, Sept. 10. Nancy Lynch
Shared memory: Renaming. Lattice agreement.
*** Moir, Anderson. Wait-free algorithms for fast, long-lived renaming.
*** Attiya, Fouren. Adaptive and efficient algorithms for lattice agreement and renaming.

Class 3: Thursday, Sept. 12. Nancy Lynch
Adaptive algorithms for renaming and collect. Algorithms for unbounded concurrency.
Attiya, Fouren. Polynomial and adaptive long-lived (2k-1)-renaming
Afek, Stupp, Touitou. Long-lived and adaptive collect with applications
Attiya, Fouren, Gafni. An adaptive collect algorithm with applications
*** Merritt, Taubenfeld. Computing with Infinitely Many Processes.
*** Gafni, Merritt, Taubenfeld. The concurrency hierarchy, and algorithms for unbounded concurrency.

Class 4: Tuesday, Sept. 17. Rodrigo Rodrigues
Byzantine quorum systems.
*** Malkhi, Reiter. Byzantine quorum systems.
*** Alvisi, Malkhi, Pierce, Wright. Dynamic Byzantine quorum systems.

Class 5: Thursday, Sept. 19. Nancy Lynch
Computing with faulty objects.
*** Afek, Greenberg, Merritt, Taubenfeld. Computing with Faulty Shared Objects.
*** Jayanti, Chandra, Toueg. Fault-tolerant wait-free shared objects.

Class 6: Tuesday, Sept. 24. Toh Ne Win, Rui Fan
Disk Paxos with finitely and with infinitely many processes.
*** Gafni, Lamport. Disk Paxos.
*** Chockler, Malkhi. Active disk Paxos with infinitely many processes.

Class 7: Thursday, Sept. 26. Nancy Lynch
Logical time. Clock synchronization.
*** Attiya, Welch book, chapters 6 and 13

October:

Class 8: Tuesday, Oct. 1. Rodrigo Rodrigues
Data replication with Byzantine failures.
*** Castro, Liskov paper
*** Rodrigues, Castro, Liskov paper

Class 9: Thursday, Oct. 3. Tina Nolte
Failure detectors.
*** Chandra, Toueg. Unreliable Failure Detectors for Reliable Distributed Systems.
*** Aguilera, Chen, Toueg. Using the Heartbeat Failure Detector for Quiescent Reliable Communication and Consensus in Partitionable Networks.
*** Gupta, Chandra, Goldszmidt. On Scalable and Efficient Failure Detectors.

Class 10: Tuesday, Oct. 8. Vida Ha
Fault-tolerant broadcasts.
*** Hadzilacos, Toueg. A modular approach to the specification and implementation of fault-tolerant broadcasts.
*** Birman, Hayden, Ozkasap, ... Bimodal multicast

Class 11: Thursday, Oct. 10. Nancy Lynch
Consensus. Paxos revisited.
*** Lamport. The Part-Time Parliament.
*** De Prisco, Lynch, Shvartsman, Immorlica, Win. A formal treatment of Lamport's Paxos algorithm

Tuesday, Oct. 15: Columbus Day, Vacation.

Class 12: Thursday, Oct. 17. Nancy Lynch
Consensus. Early-stopping consensus algorithms. Lower bounds for consensus.
*** Mostefaoui, Raynal. Solving consensus using Chandra-Toueg's unreliable failure detectors.
Aguilera, Toueg. A simple bivalency proof that t-resilient consensus requires $t + 1$ rounds.

Class 13: Tuesday, Oct. 22. Nancy Lynch
More consensus. Early-stopping consensus algorithms. Lower bounds for uniform consensus. Relating synchronous and asynchronous models.
*** Keidar, Rajsbaum. On the cost of fault-tolerant consensus when there are no faults—a tutorial.
*** Gafni. Round-by-round fault detectors: Unifying synchrony and asynchrony.

Class 14: Thursday, Oct. 24. Alex Shvartsman
Performing work in distributed systems.
Dwork, Halpern, Waarts.
*** Chlebus, De Prisco, Shvartsman.
*** Georgiou, Russell, Shvartsman.
*** Malewicz, Russell, Shvartsman.

Class 15: Tuesday, Oct. 29. Boaz Patt-Shamir
Self-stabilizing systems.
*** Dijkstra
*** Varghese. Self-stabilization by counter flushing.
*** Costello, Varghese. Self-stabilization by window washing.

Class 16: Thursday, Oct. 31. Boaz Patt-Shamir, Indraneel Chakraborty
Self-stabilizing systems.
*** Katz and Perry. On global checking and global correction.
*** Awerbuch, Patt-Shamir, Varghese. Local checking and correction.
*** Awerbuch, Patt-Shamir, Varghese, Dolev. Local checking and network reset.

November:

Class 17: Tuesday, Nov. 5. Boris Paskalev, Sayan Mitra, Seth Gilbert

End-to-end communication and routing. Sparse partitions. Online tracking.
*** Afek, Awerbuch, Gafni, Mansour, Rosen, Shavit. Slide protocol.
*** Awerbuch, Peleg. Sparse partitions.
*** Awerbuch, Peleg. Online Tracking of Mobile Users.

Class 18: Thursday, Nov. 7. Seth Gilbert, Rui Fan

Online tracking of mobile users.
*** Awerbuch, Peleg. Online Tracking of Mobile Users.
Group communication.
*** Chockler, Keidar, Vitenberg. Group communication specifications.
*** Cristian, Schmuck. Agreeing on processor group membership in timed asynchronous distributed systems.
*** Keidar, Marzullo, Sussman, Dolev. A client-server oriented algorithms for virtually synchronous group membership in WANs.

Class 19: Tuesday, Nov. 12. Rui Fan, Nancy Lynch
Group communication.
*** Keidar, Dolev
*** Fekete, Lynch, Shvartsman
*** Yeger Lotem, Keidar, Dolev PODC 97
De Prisco, Fekete, Lynch, Shvartsman, PODC 98

Class 20: Thursday, Nov. 14. Ching Law, Andrew Lau
Peer-to-peer networks: Location services.
*** Stoica et al. Chord paper
*** Ratnasamy et al. CAN paper

Class 21: Tuesday, Nov. 19. Ching Law, Andrew Lau
Peer-to-peer networks: Location services. Data management services.
*** Hildrum et al. Distributed object location in a dynamic network. Tapestry paper.
*** Dabek et al. Wide-area cooperative storage with CFS
*** Storage management and caching in PAST
Lynch, Malkhi, Ratajczak. Atomic Data Access on Content Addressable Networks

Class 22: Thursday, Nov. 21. Nancy Lynch, Seth Gilbert
Data replication. Reconfigurable atomic memory: The RAMBO algorithm.
*** Attiya, Welch.
Ladin, Liskov, Shrira, Ghemawat
Fekete, Gupta, Luchangco, Lynch, Shvartsman.
*** Lynch, Shvartsman. RAMBO. Long version. Also DISC short version.

Class 23: Tuesday, Nov. 26. Vahab Mirrokni, Mohammad Hajiaghayi
Mobile computing: Topology control.
*** Li, Halpern, Bahl, Wing, Wattenhofer. Cone-based topology control
*** Bahramgiri, Hajiaghayi, Mirrokni. Fault-tolerant and 3-dimensional topology control.

Thursday, Nov. 28: Thanksgiving Day, vacation.

December:

Class 24: Tuesday, Dec. 3. Indraneel Chakraborty, Boris Paskalev, Nancy Lynch
Mobile computing: Routing and end-to-end communication.
*** Johnson, Maltz. DSR paper.

Hu, Johnson. Caching strategies in on-demand routing protocols for wireless networks.
*** Gafni, Bertsekas. Distributed algorithms for generating loop-free routes in networks with frequently changing topology.
*** Park, Corson. TORA. A highly adaptive distributed routing algorithm for...
*** Perkins, Royer. AODV. Ad hoc on-demand distance vector routing.

Class 25: Thursday, Dec. 5. Indraneel Chakraborty, Boris Paskalev, Nancy Lynch
Mobile networks. Geographical routing.
*** Ko, Vaidya. LAR. Location-aided routing in mobile ad hoc networks. Section 3
*** Ko, Vaidya. Geocast. Geocasting in mobile ad hoc networks: location-based multicast algorithms. Section 3
Leader election, mutual exclusion and other problems.
*** Malpani, Vaidya, Welch. Distributed token circulation on mobile ad hoc networks.
Malpani, Welch, Vaidya. Leader election algorithms for mobile ad hoc networks.
*** Walter, Welch, Vaidya. A mutual exclusion algorithm for ad hoc mobile networks.
Walter, Cao, Mohanty. A k-mutual exclusion algorithm for wireless ad hoc networks.

Class 26: Friday, Dec. 6. Sayan Mitra
Mobile computing: Robot coordination.
Defago, Konegaya. Circle formation for oblivious anonymous robots with no common sense of orientation.
*** Flocchini, Prencipe. Hard tasks for weak robots.
Flocchini, Grevasi. On the intelligent behavior of stupid robots.
*** Suzuki, Yamashita. Distributed anonymous mobile robots: Formation of geometric patterns.
Walter, Welch, Amato. Distributed reconfiguration of metamorphic robot chains.
Walter, Welch, Amato. Concurrent metamorphosis of hexagonal robot chains into simple connected configurations.