

ECE 207 – Parallel and Distributed Computer Systems II (3)

Alexandridis

Shared memory and distributed systems. Parallel machines and parallel programming. Threads and message passing. Data and control parallelism. Task and system partitioning. Directory based multiprocessor systems. Software for performance. Hardware/software tradeoffs. Load balancing.

Prerequisite: ECE 188, ECE 201, or permission of the instructor

(Spring)

Textbooks:

1. D. Culler & J. Singh, “*Parallel Computer Architecture*”, Morgan Kaufmann
2. J. Bacon, “*Concurrent Systems*”, Addison Wesley
3. K. Hwang & Z. Xu, “*Scalable Parallel Computing: Technology, Architecture, Programming*”, McGraw Hill

Contents:

1. Introduction-Review
2. The parallelizing process
3. Data access & communication in multimemory systems
4. Software for performance: metrics, benchmarks
5. Synchronization mechanisms
6. Support for processes
7. Midterm examination
8. Workloads and machines
9. Directory-based designs
10. Distributed memory systems and protocols
11. Parallel programming and programming models
12. Interprocess communication
13. Message-passing programming
14. Resource allocation and concurrency control
15. Final examination