

## **ECE 188: Parallel and Distributed Computer Systems I (3 cr.)**

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### **1. Description:**

Overview. Parallel architectures. Shared memory symmetric multiprocessors. Distributed memory. Clusters and NOWs. Snoop based multiprocessor designs. Interprocess synchronization and communication. File transfer protocols. Scalable multiprocessors. Interconnection topologies. Resource control and management.

### **2. Prerequisite: ECE 181 or permission of the instructor:**

### **3. Textbooks:**

1. D. Culler & J. Singh, "*Parallel Computer Architecture*", Morgan Kaufmann
2. K. Hwang & Z. Xu, "*Scalable Parallel Computing: Technology, Architecture, Programming*", McGraw Hill

### **4. Course Topics**

1. Computer abstractions
2. Scalable computer platforms and models
3. Enabling technologies
4. Shared-memory symmetric multiprocessors
5. Distributed memory and latency tolerance
6. Caches, protocols and synchronization
7. Snoop based multiprocessor design
8. Midterm examination
9. Symmetric and CC-NUMA multiprocessors
10. Clustering
11. Scalable multiprocessors
12. MPP architecture and performance
13. Interconnection topologies
14. Future directions
15. Final examination