

Operating Systems - Course Study Sheet

Course: Operating Systems Cluster: Computing and Data

Studies processes, threads, scheduling, synchronization, memory, file systems, and protection.

Five-module course map

Module	Active evidence to produce
1. processes and threads	Explain the central idea, complete an application, diagnose one plausible error, and connect it to the next module.
2. scheduling	Explain the central idea, complete an application, diagnose one plausible error, and connect it to the next module.
3. synchronization	Explain the central idea, complete an application, diagnose one plausible error, and connect it to the next module.
4. virtual memory	Explain the central idea, complete an application, diagnose one plausible error, and connect it to the next module.
5. file systems and protection	Explain the central idea, complete an application, diagnose one plausible error, and connect it to the next module.

Reliable learning method

model state transitions, identify shared resources, specify invariants, trace events, and test failure or race scenarios

Representative application

Analyze a concurrent update, locate the race condition, and justify a synchronization strategy and its trade-offs.

Weekly study cycle

1. Preview the objective and write two questions. 2. Attend or engage and capture decisions rather than every sentence. 3. Reconstruct the main idea within 24 hours. 4. Complete independent practice. 5. Analyze the first unsupported move on each error. 6. Use feedback. 7. Schedule a delayed mixed recheck.

Self-check before moving on

Can you explain the idea without notes, complete a fresh task, detect a near-miss, verify the result, and state a limitation? Watch especially for: assuming concurrent events occur in source-code order or adding locks without reasoning about deadlock and progress.

What to save

a system trace, synchronization design, experiment, and limitations report

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