

Computer-Aided Design and Engineering Design - Course Study Sheet

Course: Computer-Aided Design and Engineering Design Cluster: Engineering Foundations

Combines problem definition, requirements, sketches, CAD models, tolerances, prototyping, and design communication.

Five-module course map

Module	Active evidence to produce
1. needs and requirements	Explain the central idea, complete an application, diagnose one plausible error, and connect it to the next module.
2. concept generation	Explain the central idea, complete an application, diagnose one plausible error, and connect it to the next module.
3. geometric modeling	Explain the central idea, complete an application, diagnose one plausible error, and connect it to the next module.
4. tolerances and drawings	Explain the central idea, complete an application, diagnose one plausible error, and connect it to the next module.
5. prototyping and verification	Explain the central idea, complete an application, diagnose one plausible error, and connect it to the next module.

Reliable learning method

define stakeholders and measurable requirements, generate alternatives, model, evaluate trade-offs, prototype, and verify

Representative application

Redesign a simple mechanism under size, load, manufacturability, safety, and cost constraints and justify the selected concept.

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: treating a detailed CAD model as a validated design without requirements, tolerances, analysis, or testing.

What to save

a design portfolio with requirements, alternatives, CAD, drawings, prototype evidence, and decisions

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