



Course: CPIT-455 Software Engineering (II)  
Prerequisite: CPIT-251 Software Engineering (I)

Instructor: Prof. Adeeb Noor (arnoor@kau.edu.sa)  
Classification: Elective      Date: Fall 2025

## "Building Trust: the CPIT-445 Story"

Sarah sat in her office, staring at a news headline: "Major Learning App Fails During Finals Week." She knew her team's project, StudyBuddy, had to be different.

**Dependable systems** aren't optional," she told her team. "When students rely on us, we can't let them down." This became their foundation - building systems that would work no matter what, just like electricity or running water.

Tom, their security expert, pointed at his screen showing recent cyber-attacks. "This is why **security engineering** matters." One data leak could hurt thousands of students." They built walls of protection around student data, like a digital fortress guarding precious secrets.

"Remember when we tried running everything on one server?" Maria laughed, pulling up old diagrams. "Now our **distributed software engineering** lets us help millions of students at once." Their system now worked like a well-organized school, with different parts working together seamlessly.

Alex focused on **safety engineering**. "It's not just about keeping the system running," he explained. "It's about making sure nothing can harm our users, even by accident." They created safety checks at every level, like having multiple safety nets under a trapeze artist.

Jenny introduced their approach to **software reuse**. "We don't reinvent wheels here," she smiled. "We use trusted building blocks." This saved them months of work and made their system more reliable, like using proven recipes in a restaurant.

"But how do we keep it all running smoothly?" Sarah asked. "**Resilience engineering** is our answer." They built StudyBuddy to bounce back from problems automatically, like a tree bending in the wind rather than breaking.



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The team spent weeks on **component-based software engineering**, making sure each part of StudyBuddy could be upgraded without disrupting students' work. "It's like changing a car's tire while it's moving," Tom explained proudly.

Their **system of systems** approach meant everything worked together perfectly - the homework helper, practice tests, and progress tracking all communicated seamlessly. "Like a symphony orchestra," Sarah often said, "each instrument beautiful alone, but magical together".

Finally, through rigorous **code coverage**, they tested every possible way students might use StudyBuddy. "We can't leave anything to chance," Jenny insisted. "Every path needs to be tested".

When StudyBuddy launched, it didn't just work - it excelled. Students could rely on it, teachers trusted it, and parents felt safe letting their children use it .

The secret wasn't in any single feature, but in how they'd respected each principle of **modern software engineering**. As Sarah told new team members, "*We're not just writing code - we're building trust, one careful decision at a time*".