SE 4550 : SOFTWARE ARCHITECTURE AND DESIGN

Semester Hours: 3.0   *Contact Hours:* 3

Coordinator: Michael Decker

Text: Pattern-Oriented Software Architecture, A System of Patterns: Vol 1

Author(s):   FRANK BUSCHMANN

Year: 2000

SPECIFIC COURSE INFORMATION

Catalog Description:

Principles and concepts of analyzing and designing large software systems. Analysis of software systems. Designing software systems using design patterns and object-oriented techniques. Prerequisites: Grade of C or better in SE 3540. Credits cannot be received for both SE 4550 and SE 5550. Approved for distance learning.

Course type: **ELECTIVE**

SPECIFIC COURSE GOALS

- I can select and use appropriate design patterns.

- I can specify a software system's architecture using UML.

- I can understand separation of concerns and its impact on software design.

- I can architect a software system based on the given requirements.

- I can perform a design review on a software system.

SOFTWARE ENGINEERING STUDENT OUTCOMES ADDRESSED BY THIS COURSE

- SE 1 An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

- SE 2 An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors

- SE 6 An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions

LIST OF TOPICS COVERED

- Introduction and Importance of Design
- Software Architecture
    - Components and connectors
    - Constraints
    - Composition
- Unified Modeling Language
- Software Design
    - Design reviews
    - Inter-operability
    - Separation of concerns
- Object-oriented Design
    - Design patterns
    - Information hiding
    - Interfaces
    - Inheritance and polymorphism