Computer Science and Engineering CSE 4233  
Software Architecture and Design

CREDIT/CONTACT HOURS: Credit Hours: 3, Contact Hours: 45

COORDINATOR: Dr. Edward B. Allen

a. Supplemental Material: None required

SPECIFIC COURSE INFORMATION:

a. Catalog Description: Three hours lecture. Topics include software architectures, methodologies, model representations, component-based design, patterns, frameworks, CASE-based designs, and case studies.

b. Prerequisites: Grade of C or better in CSE 4214/6214

c. Required/Elective:  
   Computer Science – Elective  
   Software Engineering – Required  
   Computer Engineering - Elective

SPECIFIC GOALS OF THE COURSE:

a. Specific Outcomes of Instruction:
   1. Understanding of software architecture principles and commonly used styles. (At the architecture level, “patterns and frameworks” are called “styles”.)
   2. Ability to analyze a software architecture as a set of views of a model.
   3. Ability to design software architectures that are well-suited to requirements, constraints, and concerns of stakeholders.
   4. Independent learning of the Unified Modeling Language (UML) and the ability to perform CASE-based design of software architectures using UML.
   5. Ability to document work to an acceptable standard.
   6. A basic understand of how to review software documents to detect problems.

b. Criterion 3 Outcomes:
   Note: Parenthesized list indicates the ABET EAC and CAC outcomes addressed by each performance criteria.
   1. Understanding of software architecture principles and commonly used styles.  
      (EAC: a; CAC: a)
   2. Ability to analyze a software architecture as a set of views of a model. (EAC: a;  
      CAC: a,j)
   3. Ability to design software architectures that are well-suited to requirements,  
      constraints, and concerns of stakeholders. (EAC: c,e,h; CAC: b,c,g)
   4. Independent learning of the Unified Modeling Language (UML) and the ability to  
      perform CASE-based design of software architectures using UML. (EAC: k;  
      CAC: i)
   5. Ability to document work to an acceptable standard. (EAC: g; CAC: f)
6. A basic understand of how to review software documents to detect problems.
   (EAC: k; CAC: i)

TOPICS COVERED: (Number of class hrs)
1. What is “software architecture” 3
2. Views of architectures 4
3. What is an “architecture description” 4
4. Architecture methodology 4
5. Unified Modeling Language (UML) overview 2
6. Inspection of software architectures 3
7. Module Viewtypes 4
8. Component-and-connector Viewtypes 6
9. Allocation Viewtypes 3
10. Process control styles 3
11. Advanced topics 5
12. Tests and review 4