COMP 3700: Software Modeling and Design

# Syllabus

**Credit hours:** 3

**Lecture hours**: MWF 10-10:50 AM @ Lowder 14

**Prerequisites:** COMP 2710 (Software Construction)

**Instructor:** Dr. Shehenaz Shaik

Dept. of Computer Science and Software Engineering

3139A Shelby Center

*Office hours*:MW 11AM-12PM, or by appointment

*Phone*: **(**334) 524-7973; *e-mail*: *szs0117@auburn.edu*

**Teaching Assistant:** Phong Vu, e-mail: *pmv0006@auburn.edu*

*Office:* Shelby 3136

*Office hours*: TThF 2-3PM

**Textbook:** *Object-Oriented Modeling and Design with UML*, 2nd edition, Michael Blaha and James Rumbaugh, Prentice Hall, 2005. ISBN: 978-0130159205

**References:** *Design Patterns: Elements of Reusable Object-Oriented Software*, 1st edition, Erich Gamma, Richard Helm, Ralph Johnson, John Vlissides, Grady Booch (Foreword), Addison-Wesley Professional, 1995. ISBN: 978-0201633610

*Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and Iterative Development*, 3rd edition, Craig Larman, Prentice Hall, 2005. ISBN: 978-0131489066

**Catalog Description:** Current processes, methods, and tools related to modeling and designing software systems. Communication, teamwork, and a design experience are integral course experiences.

**Course Objective:** Student will be able to:

* Understand the role of analysis and design in the software engineering lifecycle.
* Develop object-oriented designs by applying established design principles.
* Develop use-case and scenario descriptions of the requirements.
* Develop richer descriptions of design models using UML diagrams.
* Understand the role and influence of design patterns and frameworks in software design.
* Evaluate the quality of design models.

**Topics Covered:**

* Introduction to software analysis and design (3 hours)
* Object-oriented analysis with use-case modeling (3 hours)
* Conceptual domain modeling (2 hours)
* Architectural styles and design (3 hours)
* Responsibility-driven object interaction design (3 hours)
* Class design diagrams, association, aggregation, inheritance (1.5 hours)
* Dynamic behavior modeling with UML state & activity diagrams. (3 hours)
* Component-based software design with UML component and deployment graphs (3 hours)
* OO frameworks and software design patterns (9 hours)
* Design quality evaluation using OO design metrics (3 hours)
* Exams (5 hours)
* Group project presentations (5 hours)

**Course Grading:**

* Homeworks (20%)
* Project (25%)
* Exam #1 (15%)
* Exam #2 (15%)
* Final Exam (25%)

**Course Policy**

1. **Homework late submissions:** Late submissions will be accepted up to a maximum of 24 hours after due date. A grade penalty of 25% will be applied.
2. **Special Accommodations:** Students who need special accommodations should send me e-mail during the first week of classes to arrange a meeting time preferably during my office hours. Please bring your memo from the Office of Accessibility, Auburn University, to this meeting. Accommodations for each exam must be arranged one week in advance.