

1. *Course number and name*

CSC 668: Advanced Object Oriented Software Design and Development

2. *Credits and contact hours*

3 credits

Contact hours: 150 minutes of lecture sessions /week

3. *Instructor's or course coordinator's name*

Course coordinator: Barry Levine, Professor of Computer Science

4. *Text book, title, author, and year*

Squeak: Object-Oriented Design with Multimedia Applications, Mark Guzdial, Prentice Hall, current edition

a. *other supplemental materials*

Lecture slides

5. *Specific course information*

• *brief description of the content of the course (catalog description)*

Basic principles of object oriented analysis and design utilizing UML, advanced object oriented programming principles, design patterns, frameworks and toolkits; Agile software design processes. Development of a mid-size programming project working in teams. Paired with CSC 868. Students completing this course may not take CSC 868 later for credit. Extra fee required.

• *prerequisites or co-requisites*

Senior or graduate standing, and at least a C grade in CSC 413, or consent of instructor

• *indicate whether a required, elective, or selected elective course in the program*

Elective for Computer Engineering.

6. *Specific goals for the course*

a. *specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.*

Students completing the course successfully will be able to

- Utilize processes and artifacts to work effectively in a team-oriented development
- Environment
- Apply various software architectures, including frameworks and design patterns, when developing software projects
- Develop Smalltalk applications
- Program distributed applications in a Java environment
- Effectively construct medium-sized object-oriented programs.

b. *explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.*

Course addresses ABET Student Outcome(s): a, b, c, e, j, k.

7. *Brief list of topics to be covered*

- An Introduction to Object-Oriented Analysis and Design
- Some Notes on Java
- Architectural Design
- Java's Remote Method Invocation – RMI
- Object Oriented Programming Principles
- OOP and Software Engineering
- Software Engineering Concepts
- Unit Testing
- Squeak/Smalltalk – 80
- Reflection and Persistence
- Programming and Design Principles
- Event Notification
- Design Patterns
- Refactoring
- Frameworks, Toolkits, and Polymorphism
- Delegation
- Presentation and Control
- Active and Distributed Objects
- SCRUM: An Empirically-Based Process for Software Project Management
- Documentation and Coding Standards