

COSC427: Advanced OO Design

Contents¹

This course investigates the question of “what makes a good OO design?” Ideas introduced in 324 such as design patterns, design by contract, the Liskov substitution principle and the open-closed principle are extended. We go beyond the Gang of Four to include architectural patterns, analysis patterns, anti-patterns, refactoring, and more. Likewise, we cover a broader range of OO design principles and heuristics such as:

- Arthur Riel’s heuristics
- Law of Demeter
- Dependency inversion principle
- Once and only once
- Common closure principle
- Favour composition over inheritance
- etc

A high level of student participation in classes is expected; students will research and present OO design principles to the class.

Assessment²

20% wiki contribution

30% design study

50% exam

References

We will draw on an eclectic set of web pages, journal articles and library books, including:

- Ward Cunningham’s wiki: <http://c2.com/cgi/wiki?WelcomeVisitors> (a.k.a. The Portland Pattern Repository)
- Bob Martin’s OO principles: <http://www.objectmentor.com/resources/publishedArticles.html>
- Martin Fowler’s bliki: <http://www.martinfowler.com/bliki/>
- The Hillside Group: <http://hillside.net/>
- Trygve Reenskaug’s efforts to improve OO: <http://heim.ifi.uio.no/trygver/2008/commonsense.pdf>
- Object-oriented design heuristics by Arthur J. Riel.

Recommended Preparation

COSC324 is a prerequisite. Students should be competent OO programmers and comfortable with UML.

¹ The nature and content of this course is subject to change based on decisions made by the class.

² Likewise for assessment.