

# Topics covered by the Written Exam

**O**bject-**O**riented  
**S**oftware**C**onstruction

Armin B. Cremers, Tobias Rho, Daniel Speicher &  
Holger Mügge  
(based on Bruegge & Dutoit)



# Topics for the Written Exam

- ◆ UML
  - ◆ All covered UML diagrams types
- ◆ The software lifecycle
  - ◆ Phases, activities
- ◆ Requirements Elicitation
  - ◆ Use Case Models
  - ◆ Extract Use Cases from scenarios/problem descriptions
- ◆ Requirements Analysis
  - ◆ Abbotts Textual Analysis
    - ◆ Extract a Domain Object Model from a use case
  - ◆ Robustness Diagrams
    - ◆ Remember communication rules!
  - ◆ Dynamic Model
    - ◆ Sequence, state-chart diagrams

- ◆ System Design
  - ◆ Decomposing a System (Subsystems, Cohesion, Layers etc.)
  - ◆ Architectural Styles (Client-Server, P2P, MVC, SOA,...)
  - ◆ Mapping subsystems to nodes and components
- ◆ Object Design
  - ◆ Design Patterns
    - ◆ Command, Abstract Factory, Builder, Proxy, Observer, ...
  - ◆ Mapping models to Code
    - ◆ Mapping associations
    - ◆ Object-Relational mapping (Tables)
  - ◆ Constraints with OCL

- ◆ Testing
  - ◆ Testing Terminology (including Unit, Integration, Functional, Performance, Installation Test)
  - ◆ Integration Testing Strategies: Big Bang, Bottom Up, ...
  - ◆ Black/White-Box, Equivalence class/Path/Loop/Branch testing
- ◆ Refactoring
  - ◆ Overall understanding of the goals and procedures
  - ◆ Smells: Duplicated Code, Comments, Feature Envy, ...
  - ◆ Refactorings: Rename, Extract, Move Method, ...
- ◆ Rational & Configuration Management are **not** covered by the exam