List of topics for the
FINAL EXAMINATION

1. Analysis of Distributed Systems

2. Building Distributed Systems I.
Multi-tier architecture, the importance of business tier. Communication facilities: RPC-based (e.g. Java Remote Method Invocation) and message-oriented (point-to-point and publish-subscribe models). Naming service.

3. Building Distributed Systems II.

4. Formal Semantics
Elements of formal definitions of programming languages, the three main approaches to formal semantics definition. Informal language specification documents versus formal language definitions, application areas of formal semantics. Concrete and abstract syntax, context-free grammars. Static semantics, attributed grammars and their implementation. Operational semantics, rewrite systems, natural deduction; executable semantics in the K framework. Denotational semantics, fixed-point theory; executable semantics in Haskell. Formal definition of basic imperative program statements and simple domain-specific languages.

5. Advanced Functional Programming
Fundamentals of functional languages, model of computation, method of evaluation, lists, currying, higher-order functions, purity. Types: algebraic data types (ADTs), type classes, examples.
