**Extreme objects**

Lecture 1: Introduction to objects. Object structure. Attributes and fields

* Examples of objects
* Definition of object term
* Relation between computer memory and objects
* Key characteristics of any object
* Object structure. Attributes. Kinds of attributes

Lecture 2: Object life cycle and its operations

* Object creation and attributes initialization
* Life time loop – activations
* Destruction

Lecture 3: Group of objects form a type. Introduction of type concept

* Objects with identical structure form a type
* Special case of constants of different kinds
* Persistence of objects. Backbone of dynamic loading
* Kinds of type parametrization. Genericity

Lecture 4: Object equality. Object immutability. Shallow and deep

* How to compare objects
* What can be immutable
* Shallow and deep immutabilities

Lecture 5: Relations between objects. Refers and includes

* Reference and value semantics
* Cycles

Lecture 6: Object-class-module-type hierarchy

* Compile time and runtime relations
* Class-module difference and commonality
* Kinds of types

Lecture 8: Inheritance, overriding and member adaptations

* What is inheritance
* What is member adaptation while inheriting
* Kinds of overriding. Function to variable or constant
* Conformance

Lecture 9: Systematic assertions

* Predicates. Kinds of predicates
* Preconditions, postconditions, invariants and variants
* Alignment with inheritance
* Implications for practical usage. No more issue root cause triaging

Lecture 7: Active (concurrent) objects. Interactions between them

* Concept of processing element – thread, process, service
* Active objects never sleep
* How to support synchronous and asynchronous interactions between objects

Lecture 10: Control structures

* Member activation
  + Assignment is a kind of special case
* Conditional
* Loops
* Exceptions. Kinds of exceptions
* Block
* Integration with assertions

Lecture 11: Tuples as a basic concept

* What is a tuple
* Every routine has 1 parameter
* Conformance

Lecture 12: Kernel classes

* 0 and 1 as two basic atoms
* Constant objects
* Regular expressions

Lecture 13: Overloading

* Routine names overloading
* Attribute names overloading
* Class names overloading
* Resolving ambiguities

Lecture 14: Compilation units and separate compilation

* Kinds of compilation units: script, program and library
* Clusters as areas for search
* Names controls
* Concept of the compilation context

Examination