Principles of Software Composition

PSC - code ???
72h (9 cfu)
2nd semester
written + oral exam

borrowed from
Computer Science
(Sw curriculum)

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Objectives

Programming paradigms
(declarative, HO, concurrent, mobile, stochastic, ...)

Mathematical models
(concrete & abstract)
(domains, lambda-calculus, LTS, SOS, DTMC, CTMC, ...)

Understand
(induction, recursion, equivalence, congruence, compose, ...)

Experiment
/design, validate, improve, ...)

Analyse
(compliance, correctness, verification, performance, ...)

Google Go!
SWI Prolog
Orc
Erlang

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Learning outcomes

Assign meaning to Programs

- Higher-Order Functional Features
- Nondeterminism, Concurrency and Mobility
- Temporal and Modal Logic
- Service orchestration
- Probability + Action + Nondeterminism

From formal syntax to formal semantics

Property specification and proof techniques

Rigorous methods for reliable software development
(Sw Architect, Engineer, Developer)
Theses

SOS rule formats for reversible languages
Semantics preserving code obfuscation
Models for communicating transactions

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