UCLouvain

lsinc1104

2023

Programming Paradigms and Concurrency

5.00 credits	30.0 h + 30.0 h	Q2

This learning unit is not open to incoming exchange students!

Teacher(s)	Van Roy Peter ;
Language :	French
Place of the course	Charleroi
Prerequisites	This course assumes that the student already masters basic programming skills targeted by courses LINFO1101 or LEPL1401 and concepts on algorithmics and simple data structures covered by course LEPL1402. *The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.* *The prerequisite(s) for this Teaching Unit (Unité d'enseignement – UE) for the programmes/courses that offer this Teaching Unit are specified at the end of this sheet.*

Content	The goal of this course is to broaden and deepen the programming knowledge acquired in preceding courses. The course treats the following subjects: • The course gives a uniform framework for all programming concepts, organised as programming paradigms. • The course gives a formal semantics and reasoning techniques for all paradigms. • The course gives an introduction to lambda calculus as foundation of functional programming and higher-order programming. • Higher-order programming is used as organizing principle for the construction of procedural abstractions. • Concurrent programming is presented in two forms, namely deterministic dataflow and message-passing concurrency. • Data abstraction is presented in its general form and with its two principal derived forms, namely object-oriented programming and abstract data types. • Symbolic programming and algorithm design principles are used throughout the course. • Five important programming paradigms are presented in the course: functional programming, object-oriented programming, deterministic dataflow programming, actor dataflow, and active object (multi-agent) programming. Examples of practical applications are given for all concepts and all paradigms.
Faculty or entity in charge	SINC

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Bachelor in Computer Science	SINC1BA	5	LSINC1101	🔍