



In view of the health context linked to the spread of the coronavirus, the methods of organisation and evaluation of the learning units could be adapted in different situations; these possible new methods have been - or will be - communicated by the teachers to the students.

5 credits

30.0 h + 30.0 h

Q2

Teacher(s)	Van Roy Peter ;
Language :	English
Place of the course	Louvain-la-Neuve
Main themes	<ul style="list-style-type: none"> <li>• Concurrent programming paradigms (including shared state, message passing, deterministic dataflow)</li> <li>• Major programming concepts (including lazy evaluation, nondeterminism, agent, lock, monitor, transaction, deadlock, higher-order programming, compositionality)</li> <li>• Reasoning and design techniques for concurrent programs</li> <li>• Practical applications in several areas (including digital logic simulation, lift control, transaction management)</li> </ul>
Aims	<i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i>
Evaluation methods	<p><b>Due to the COVID-19 crisis, the information in this section is particularly likely to change.</b></p> <ul style="list-style-type: none"> <li>• Dispensatory test 25% (around week 7)</li> <li>• Project 25%</li> <li>• Final exam 50% (or 75% if redoing test part)</li> </ul> <p>The project is mandatory and is done during the quadrimester. It can only be done only once and it counts for the whole academic year.</p>
Teaching methods	<p><b>Due to the COVID-19 crisis, the information in this section is particularly likely to change.</b></p> <ul style="list-style-type: none"> <li>• Lectures each week</li> <li>• Practical sessions in the computer room every week, to solve simplified problems using concepts explained during the lectures</li> <li>• Design and programming project to apply these concepts in a more complex application</li> </ul>
Content	<ul style="list-style-type: none"> <li>• Concurrent programming paradigms (shared state, message passing, declarative concurrency)</li> <li>• Major programming concepts including function, object, class, abstraction, instantiation, inheritance, state, encapsulation, concurrency, dataflow, lazy evaluation, nondeterminism, agent (active object), lock, monitor, transaction, deadlock, higher-order programming, compositionality, etc.</li> <li>• Design and reasoning techniques with different paradigms for building correct programs</li> <li>• Practical applications in several domains (for example, simulation of digital logic circuits, lift system control, transaction manager).</li> </ul>
Inline resources	LINGI1131 Moodle: <a href="https://moodleucl.uclouvain.be/course/view.php?id=1824">https://moodleucl.uclouvain.be/course/view.php?id=1824</a>
Bibliography	Peter Van Roy et Seif Haridi, Concepts, Techniques, and Models of Computer Programming, MIT Press, 2004
Other infos	<p>Prerequisite:</p> <ul style="list-style-type: none"> <li>• Second-year programming course Informatique 2 (LFSAB1402) or equivalent.</li> </ul>
Faculty or entity in charge	INFO

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Aims
Master [60] in Computer Science	SINF2M1	5		
Master [120] in Computer Science	SINF2M	5		
Minor in Engineering Sciences: Computer Sciences (only available for reenrolment)	LSINF100I	5		