

Course synopsis: Paradigms of Computer Programming (part 1 and part 2)

The supplement contains contextual information about your MOOC. This general information is intended to facilitate student and institute in their process of recognition of the MOOC within an educational program. See information on levels below, we revised the levels of EdX.

GENERAL INFORMATION	
Course code and title	LFSAB1402 – Informatics 2
Based on MOOC :	https://www.edx.org/course/paradigms-computer-programming-louvainx-louv1-1x-1 https://www.edx.org/course/paradigms-computer-programming-louvainx-louv1-2x-1
Subject area	Computer science - programming
Institute/Faculty	Louvain School of Engineering
Platform	This MOOC is delivered through edX.
Type MOOC Assessment	Quizzes and programming exercises
COURSE LEVEL AND WORK LOAD	
Level*	Intermediate
Original University Level	2 nd year of bachelor degree at UCLouvain
Estimated total workload in hours	Nr of hours: 140 5
	Nr of ECTS (1ECTS= 28 hours):
Expected prior knowledge/prerequisites	Basic knowledge of programming in at least one programming language. For the semantics, basic knowledge of mathematical concepts such as sets, lists, and functions.
COURSE CONTENT	

<p>Main topics Topics per week</p>	<ul style="list-style-type: none"> • Data abstraction • Linear data abstractions (stacks, queues, lists, etc.) and their applications • Techniques for representing linear data abstractions • Object-oriented modeling (inheritance, composition, and reuse) • Preconditions, postconditions, invariants • Reasoning techniques (deduction rules, termination proofs, ...) • Basics of computational complexity • Derivation of the temporal complexity of an algorithm • Derivation of the spatial complexity of a data structure • Recursive formulation of a solution and recursive algorithms • Tree-like data abstractions (binary trees) and their applications • Techniques for representing tree-like data abstractions • Quantified measurements of program efficiency • Design and implementation of methods for testing and validating programs
<p>Learning Outcomes After the course you are able to</p>	<ul style="list-style-type: none"> • Specify problems, break them down into their basic steps, and design algorithms and abstractions to solve them • Choose the right programming paradigm and write a program in this paradigm to solve a problem • Use formal semantics to reason about program correctness • Write small concurrent programs in the deterministic dataflow paradigm
<p>Teaching method</p>	<ul style="list-style-type: none"> • Professor's explanation in videos • Programming exercises with the Mozart software
<p>Assessment methods</p>	<p>Programming assignments.</p>
PRACTICAL MATTERS	
<p>Date MOOC runs, paced or self-paced (How flexible is the start date)</p>	<p>From September (around the 17th) to early January. There are two MOOCs to complete, the second being the complement of the first one.</p>
<p>Frequency of MOOC run Per academic year</p>	<p>Once a year.</p>
ADDITIONAL INFORMATION VIRTUAL EXCHANGE STUDENTS	
<p>Type of student this <u>Online</u> course could be interesting for</p>	<p>Students in computer sciences</p>
<p>Type of additional assessment for campus students</p>	<p>Written exam</p>
<p>Timing of the additional assessment</p>	<p>Exam between January 4 and 26, 2019 (exact date to be communicated around November 2018).</p>
<p>Max number of exchange students per run</p>	<p>10</p>

Different time zones, multiple exams possible?	
Grading**	ECTS scale.

***Levels MOOCs**

To enable evaluation of the level of a MOOC by student and also the university (stakeholders such as programme directors, teachers and board of examiners), we revised the levels indicated on edX, with a focus on issuing credits for either bachelor or master programs of our universities. Given the absence of formal entry requirements in MOOCs, and the fact that some MOOCs may be derived from, but do not in their current form are included in, a curriculum, the levels described below are an *indication only* for the course level. Combined with clear prerequisites, they provide more insight in the level of the MOOC.

- **Introductory** - This is an introductory undergraduate/bachelor course building on knowledge acquired during pre-university education. The latter can be specific knowledge for example in a discipline like having an understanding physics, math etc. on high school level.
- **Intermediate** - This is an advanced undergraduate/bachelor course. Some specific knowledge and experience on university level is needed to follow and finish this course.
- **Advanced**- These are courses on master level or higher. Specific knowledge and experience at completed bachelor level is needed to follow and finish this course. The learner acquires specialized knowledge.

**** Grading scales**

Grading scales table

Grading scales table (1997)

ECTS	D	A	B	DC	E	SP	F	UC	GR	IS	I	ERL	NL	P	PR	S	CH	
																		Distinction
Excellent	1	1	11	14	17/19	1	10/11	1	11	11	11/12	1	11	11	11	11	11	11
	2/25	22	12	12	12	11/11												
Very good	1		30	11	10/10/10	2/5	14-17	Upper Div	0	0	00	Dist I	C/S	35	37	35	5.5	
	2	1	30	11	10/10/10	2/5	14-17	Upper Div	0	0	00	Dist I	C/S	35	37	35	5.5	
Good	2	1	30	11	10/10/10	2/5	14-17	Upper Div	0	0	00	Dist I	C/S	35	37	35	5.5	
	2	1	30	11	10/10/10	2/5	14-17	Upper Div	0	0	00	Dist I	C/S	35	37	35	5.5	
Satisfactory	3	2	30	11	10/10/10	2/5	14-17	Upper Div	0	0	00	Dist I	C/S	35	37	35	5.5	
	3	2	30	11	10/10/10	2/5	14-17	Upper Div	0	0	00	Dist I	C/S	35	37	35	5.5	
Pass	4	4	30	0	10/10/10	1	10-11	Upper Div	0	0	00	Dist I	C/S	35	37	35	5.5	
	4	4	30	0	10/10/10	1	10-11	Upper Div	0	0	00	Dist I	C/S	35	37	35	5.5	
Fail	5	5	30	0	10/10/10	1	10-11	Upper Div	0	0	00	Dist I	C/S	35	37	35	5.5	
	5	5	30	0	10/10/10	1	10-11	Upper Div	0	0	00	Dist I	C/S	35	37	35	5.5	

Dweden U- Indikat (Fail) G-Gedang (Pass) VO-V.11 Godkind (Pass with distinction)

ECTS Scale	6	5.5	5	4.5	4	3.5	3	2.5	2	1.5	1	NF
Western America Scale	A	A-	B	B+	C	C-	D	F	F	F	F	Not
ECTS Scale	A	B	C	D	E	F	F	F	F	F	F	Not