



5.00 credits

30.0 h + 22.5 h

Q2

Teacher(s)	Absil Pierre-Antoine ;Meerbergen Karl ;
Language :	English > French-friendly
Place of the course	Louvain-la-Neuve
Prerequisites	Basic training in numerical methods and programming (level of LEPL1104).
Main themes	<ul style="list-style-type: none"> • Numerical software in C++ and Python • Parallel computing • Numerical methods for partial differential equations
Learning outcomes	<p>At the end of this learning unit, the student is able to :</p> <p>Contribution of the course to the program objectives (Nr) :</p> <ul style="list-style-type: none"> • AA1.1, AA1.2, AA1.3 • AA2.2, AA2.3, AA2.4 • AA3.2 • AA6.1, AA6.3 <p>After successful completion of this course, the student will be able to:</p> <p>1</p> <ul style="list-style-type: none"> • Write, modify and use numerical software in C++ and Python; • Write, modify and use scientific software for partial differential equations; • Employ parallel programming techniques <p>Transversal learning outcomes :</p> <ul style="list-style-type: none"> • Use a reference book in English; • Use programming languages for scientific computing; • Release software along with suitable user documentation.
Evaluation methods	<ul style="list-style-type: none"> • Work carried out during the term: homework assignments, exercises, or laboratory work. These activities are thus organized (and evaluated) only once per academic year. • Exam: written, or sometimes oral depending on the circumstances. <p>The final grade is $\min(1/2 D + 1/2 E, D+5, E+5)$, where D is the grade of the work carried out during the term and E is the grade of the exam.</p> <p>Further information is provided in the "Course outline" document available on Moodle (see "Online resources" below).</p>
Teaching methods	<ul style="list-style-type: none"> • Interactive lectures • Homework assignments, exercises, or laboratory work under the supervision of the teaching assistants
Content	<ul style="list-style-type: none"> • Programming concepts in C++ and Python • Numerical software engineering in C++ and Python • Analysis of partial differential equations • Numerical methods for partial differential equations • Introduction to parallel computing using MPI • Other topics related to the course themes.
Inline resources	https://moodle.uclouvain.be/course/view.php?id=2951
Bibliography	<ul style="list-style-type: none"> • Textbook • Complementary documents posted on Moodle <p>Further information is provided in the "Course outline" document available on Moodle.</p>
Other infos	The organisation details are given every year in the course outline.

Faculty or entity in charge	MAP
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Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Computer Science and Engineering	INFO2M	5		
Master [120] in Computer Science	SINF2M	5		
Master [120] in Mathematical Engineering	MAP2M	5		