






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.

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| 5 credits | 30.0 h + 30.0 h | Q2 |
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| Teacher(s) | Dupont Pierre ; |
| Language : | French |
| Place of the course | Louvain-la-Neuve |
| Main themes | <ul style="list-style-type: none"> • Design and implementation of iterative or recursive algorithms: path, counting, sorting, searching in collections • Computational complexity • Basic data structures: arrays, stacks, queues, linked lists • Recursive data structures: tree structures, binary search trees • Invariants |
| Aims | <p>Given the learning outcomes of the "Bachelor in Computer science" program, this course contributes to the development, acquisition and evaluation of the following learning outcomes:</p> <ul style="list-style-type: none"> • S1.I2, S1.I3 • S2.2-4 • S6.2 <p>Students who have successfully completed this course will be able to:</p> <ul style="list-style-type: none"> • justify a choice between several algorithmic solutions to solve a given problem, • analyze algorithms, iterative or recursive, to represent and manipulate collections and to propose variants thereof, 1 • choose, design and use data structures, including recursive, • give a reasoned estimate of the time complexity of iterative algorithms and the spatial complexity of data structures; • reasoning about properties of algorithms or data structures in terms of invariants. <p>Students will have developed methodological and operational skills. In particular, they have developed their ability to:</p> <ul style="list-style-type: none"> • to take a critical look and make a reasoned analysis of a solution or set of solutions that could be made to a given problem by setting quality criteria, • realize small programs using conventional algorithms and data structures. <p>-----</p> <p><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></p> |
| Evaluation methods | <p>Due to the COVID-19 crisis, the information in this section is particularly likely to change.</p> <p>A note of PARTICIPATION reflects the involvement of the student during the year to workouts, its work on INGINIOUS (a server offering partially automatic correction and/or feedback) and 2 mini-projects at the end of the semester.</p> <p>In the first session, the participation grade is worth 20% of the final grade + 80% for the final exam (closed book). The participation mark can not be reassessed.</p> <p>In the second session, participation grade and the final exam are worth respectively 10 % and 90% of the overall score.</p> <p>The final exam is, by default, a written exam (on a UCLouvain computer or, when appropriate, on paper).</p> |

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| Teaching methods | <p>Due to the COVID-19 crisis, the information in this section is particularly likely to change.</p> <ul style="list-style-type: none"> • Lectures • Practical sessions • 2 mini-projects at the end of the semester • Computing server (INGINious) to facilitate self-assessment by students of the solutions they propose to practical works |
| Content | <p>Algorithmics is concerned with solving problems by implementing sequences of elementary operations according to a predefined process or procedure leading to a solution.</p> <p>This discipline is both abstract and put into practice through programs (e.g. implemented in Python) and run on a computer</p> |
| Inline resources | <p>http://moodleucl.uclouvain.be/course/view.php?id=9010</p> |
| Bibliography | <p>Il n'y a pas d'ouvrage de référence obligatoire mais, à titre complémentaire, des ouvrages sont recommandés sur le site Moodle.</p> |
| Faculty or entity in charge | <p>INFO</p> |

| Programmes containing this learning unit (UE) | | | | |
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| Program title | Acronym | Credits | Prerequisite | Aims |
| Master [120] in Linguistics | LING2M | 5 | |  |
| Bachelor in Computer Science | SINF1BA | 5 | |  |
| Approfondissement en sciences et technologies de l'information et de la communication (pour seule réinscription) | LSTIC100P | 6 | |  |
| Minor in Computer Sciences | LINFO100I | 5 | |  |
| Minor in Information and Communication Studies and Technologies | LSTIC100I | 5 | |  |