

5.00 credits


30.0 h + 30.0 h

Q2

**This learning unit is not being organized during this academic year.****This learning unit is not open to incoming exchange students!**

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| Language : | French |
| Place of the course | Charleroi |
| Prerequisites | <i>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.</i> |
| Main themes | <ul style="list-style-type: none"> • Research-based problem solving: problem formulation, informed and uninformed research strategies, local research, behavioral assessment and estimated cost, applications • Constraint satisfaction: formulation problems, constraint tracing and propagation, applications • Games and adversarial research: minimax algorithm and Alpha-Beta pruning, applications • Propositional logic: knowledge representation, inference and reasoning, applications • First-order logic: knowledge representation, inference and reasoning, forward and backward chaining, rule-based systems, applications • Planning: planning problem languages, research methods, planning graphs, hierarchical planning, extensions, applications • AI, philosophy and ethics: "can machines act intelligently?", "can machines really think?", ethics and the risks of artificial intelligence, the future of artificial intelligence |
| Learning outcomes | <p>At the end of this learning unit, the student is able to :</p> <p>With regard to the AA reference of the "Master's degree in computer science" program, this course contributes to the development, acquisition and evaluation of the following learning outcomes:</p> <p>INFO1.1-3 INFO2.2-4 INFO5.2, INFO5.5 INFO6.1, INFO6.4</p> <p>With regard to the AA reference of the "Master [120] in computer science" program, this course contributes to the development, acquisition and evaluation of the following learning outcomes:</p> <p>SINF1.M4 SINF2.2-4 SINF5.2, SINF5.5 SINF6.1, SINF6.4</p> <p>With regard to the AA reference of the "Master [60] in computer science" program, this course contributes to the development, acquisition and evaluation of the following learning outcomes:</p> <p>1SINF1.M4 1SINF2.2-4 1SINF5.2, 1SINF5.5 1SINF6.1, 1SINF6.4</p> <p>Students who successfully complete this course will be able to</p> <ul style="list-style-type: none"> • explain and make good use of the basic concepts of knowledge representation, problem solving and reasoning methods, as used in artificial intelligence • assess the applicability, strengths, and weaknesses of knowledge representation, problem solving, and reasoning methods in solving real-world engineering problems • develop intelligent systems by assembling solutions to concrete problems • discuss the role of knowledge representation, problem solving and reasoning methods in the design and realization of intelligent systems <p>Students will have developed methodological and operational skills. In particular, they will have developed their ability to:</p> <ul style="list-style-type: none"> • master a new programming language primarily using an online tutorial • deal with deadlines and competitiveness when developing an application that wants to be the most efficient. |

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| Evaluation methods | <ul style="list-style-type: none"> • Review: 70% • Assignments: 30%. The work must be personal (team of 2). No collaboration between groups. No copy from internet. Cheating = 0 / 20 for all missions. In case of failure of the missions the weighting of this part will be more important. • The work can only be carried out during the quadrimester of the course. It is not possible to redo the work during another semester or for the September session. |
| Teaching methods | <ul style="list-style-type: none"> • problem-based learning • Learning by doing • 5 missions (of two weeks) • teams of two students • Lecture (1 hour / week) • Feedback on closed missions (1 / 2 hour) • Discussion of the current mission (1 / 2 hour) |
| Content | <ul style="list-style-type: none"> • Introduction • Research • Informed search • Local search • Search with opponent • Constraint Satisfaction Problem • Logical agent • First-order logic and inference • Classic planning • Planning in the real world • Learn from examples • Philosophical foundations, the present and the future of AI |
| Inline resources | https://moodleucl.uclouvain.be/course/view.php?id=8082 |
| Other infos | <p>Bibliography:</p> <ul style="list-style-type: none"> • Stuart Russell, Peter Norvig, <i>Artificial Intelligence : a Modern Approach</i>, 3rd Edition, 2010, 1132 pages, Prentice Hall • transparents en ligne |
| Faculty or entity in charge | SINC |

| Programmes containing this learning unit (UE) | | | | |
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| Program title | Acronym | Credits | Prerequisite | Learning outcomes |
| Bachelor in Computer Science | SINC1BA | 5 | LSINC1103 AND LSINC1402 |  |