

5.00 credits

30.0 h + 30.0 h

Q1


This learning unit is not open to incoming exchange students!

Teacher(s)	Riviere Etienne ;
Language :	French
Place of the course	Charleroi
Prerequisites	This course assumes that the student already masters the programming skills in C language targeted by LEPL1503 and the algorithmic notions covered by the LEPL1402. <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	• Levels of abstraction in computer systems • Processor architectures • Machine language, assembly language and C language • Roles and functions of operating systems • Using the features of an operating system in applications • Processes and threads: concepts, problems and solutions • Multi-processor systems
Learning outcomes	At the end of this learning unit, the student is able to : 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: • S1.I4 • S2.2-4 • S4.3 • S5.2, S5.3, S5.5 Students who have successfully completed this course will be able to • explain which functions are fulfilled by the different levels of the hierarchy ranging from the physical machine to the level on which the applications are based; • explain the main architectures of operating systems and processors, as well as the main devices and techniques used to realize them; • use and effectively implement the various services and functions offered by processors and operating systems.

Evaluation methods	January: - indication to turn in exercises before a soft deadline (5%) - continuous evaluation, mini projects (35%) - exam (60%) September: - participation in mandatory activities -- maintained from January session, cannot be redone (5%) - personal exercises and projects (35%) - exam (60%) Continuous evaluation activities are certification. Therefore, deontology rules in terms of plagiarism or any kind of fraud and academic misconduct apply strictly. Continuous evaluation activities are all strictly individual unless specifically mentioned by the professor. For activities allowed by pairs of students, any collaboration with a person outside of the student pair will be a case of fraud. Sharing code or any other production to a third party is a case of plagiarism. The use of generative AIs is tolerated to correct the style, grammar, and spelling of text previously authored by the student but forbidden for generating text based on a prompt or for generating code. Plagiarism detection solutions will be applied systematically. The continuous evaluation will lead to a grade over 8 points, communicated before the exam in January or August. These 8 points include the participation grade. Any violation of deontological principles will lead to a grade of 0/8 for the entirety of the continuous evaluation, and the denunciation of the student(s) to responsible authorities. Formative activities may become certificative and cover a part to all of the weight of the exam if the circumstances impose it. The professor may ask for an additional oral exam for any certificative activity, including any continuous evaluation activity and the exam. An additional exam is mandatory and part of the evaluation process. The exam may use all or a subset of the following evaluation modalities. The respective proportion of points for each part is announced at the beginning of the exam: • open questions on the course content • open problems requiring an application of skills and knowledge acquired during the course • multiple-choice and multiple-answer questions under the principle of the "standard-setting". An incorrect answer to one of the questions cannot lead to a negative grade, and the exam part as a whole cannot grant negative points. However, a minimum threshold (announced in the exam) of correct answers is necessary before effectively acquiring points for this exam part. Rules Regarding the Use of Artificial Intelligence (AI) The use of AI is encouraged for interactive review of course material. After reading (and re-reading) a chapter of the syllabus, students may ask an AI, such as ChatGPT, to pose questions about the chapter's content interactively and to identify gaps in their understanding. The use of AI to correct and improve a text produced by the student is also permitted, provided that this is clearly mentioned in the report or the submitted content. The use of AI to generate text or images (for example, from a prompt or the exercise statement) is strictly prohibited. Using AI to help generate code is discouraged, as students need to make the effort to develop it themselves at least once to fully grasp the material and system concepts covered in the course. It is not strictly prohibited, as long as the rules below are scrupulously followed. Authorized uses of AI are subject to the following rules: • Students must take full responsibility for their work and be able to orally explain all the code and deliverables (documentation, deployment scripts, etc.) submitted for exercises and projects, including Ingenious exercise code. • AI usage must be documented precisely in the documentation of projects P0 and P1, in a dedicated section specifying which AI tools were used and for which part. Submission of code or documentation partially or entirely generated by AI without proper documentation will be considered plagiarism. Students who have not used AI must also indicate this in the section. Students must be prepared to answer questions from the instructor or teaching assistants about AI usage in other exercises and projects. • It is not permitted to ask tutors for help in debugging or correcting code generated directly by AI. • Any use of AI considered abusive and detrimental to the acquisition of knowledge targeted by the project may be treated as an academic violation under Section 7, Articles 107 and following of the General Regulations on Studies and Examinations (RGEE), with all applicable consequences, as well as Articles 111 and following of the RGEE. In the event of suspected abusive use of AI in a submitted project, or incomplete/inaccurate reporting of AI usage, the course instructor may summon the student for an additional oral consultation and take necessary measures in agreement with the EPL jury head.
Teaching methods	- lectures; - online exercises and self-training using the Ingenious platform; - exercises and work sessions with tutors. Some of these activities may be organized online.
Content	The course presents the organization and the use of computer systems, and the principles and implementation of operating systems.
Inline resources	A link to the online syllabus is available on the Moodle page of the course.

Faculty or entity in charge	SINC
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Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Bachelor in Computer Science	SINC1BA	5		