lsinf1113
2017

6 credits	30.0 h + 30.0 h	Q1

Teacher(s)	Sadre Ramin ;
Language :	French
Place of the course	Louvain-la-Neuve
Prerequisites	LSINF1111 andLSINF1101 *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.*
Main themes	• Representation of floating point numbers • rounding error Problem and error propagation (discussion for the methods below). • Solving linear systems, including computation of eigenvalues ''/ eigenvectors and its application in terms of the principal component analysis • Interpolations and regressions • numerical computation of derivate • numerical computation of integral • Solving nonlinear equations, application to optimization problems • Fourier decomposition (including explaination of complex numbers) • Differential equations (including an introduction to this mathematical field) Since the course is intended for IT professionals, the emphasis will be on practical implementation of these methods. Each programming mission will be contextualized and applied to a real application (economy, etc). Applications and examples will be taken preferably in the other courses of the program SINF1BA (economics, electronic basics for computer science, for example). Otherwise, they will be taken in other domains (mechanical, for example) but the teacher will take care to introduce the relevant concepts.
Aims	Given the learning outcomes of the "Bachelor in Engineering" program, this course contributes to the development, acquisition and evaluation of the following learning outcomes: • S1.G1, S1.3 • S2.2, S2.4 • S6.1 Students completing successfully this course will be able to • model simple problems using appropriate mathematical notation; • identify numerical algorithms suitable for solving a problem expressed mathematically; • select specific criteria on the basis of the most efficient method to numerically solve such a problem. • implement the numerical method to solve of the problem. - - - - *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".*
Evaluation methods	Written final exam including in the second session
Teaching methods	- Lectures for the theoretical part - Exercises - implementation of numerical algorithms and visualization of results in Java using open-source tools (gnuplot etc.)
Inline resources	https://moodleucl.uclouvain.be/course/view.php?id=10287
Faculty or entity in charge	INFO

Programmes containing this learning unit (UE)

Program title	Acronym	Credits	Prerequisite	Aims
Bachelor in Computer Science	SINF1BA	6	LSINF1111 AND LSINF1112 AND LSINF1101	🔍
Master [120] in data Science: Statistic	DATS2M	6		🔍