UCLouvain

linfo2359

2022

Software engineering and programming systems seminar

3.00 credits	30.0 h	Q1

Teacher(s)	Legay Axel ;
Language :	English > French-friendly
Place of the course	Louvain-la-Neuve
Main themes	The topics covered in the seminar will address Software engineering and programming systems. In particular, scientific articles are selected in these fields. On the one hand, students are confronted with problem of the quality of a scientific bibliography. Moreover, students read scientific literature (eg articles from international journals).
Learning outcomes	**At the end of this learning unit, the student is able to :** Given the learning outcomes of the "Master in Computer Science and Engineering" program, this course contributes to the development, acquisition and evaluation of the following learning outcomes: • INFO1.1-3 • INFO3.1, INFO3.2 • INFO5.3-4, INFO5.6 • INFO6.1, 6.4 Given the learning outcomes of the "Master [120] in Computer Science" program, this course contributes to the development, acquisition and evaluation of the following learning outcomes: • SINF1.M2-3 • SINF3.1, SINF3.2 • SINF5.3-4, SINF5.6 • SINF6.1, SINF6.3, SINF6.4 Student completing successfully this course will be able to • establish the state of the art based on the scientific literature, when confronted with a research problem beyond his current knowledge, • prepare a comprehensive report including a scientific bibliography and explaining its relevance to a theme, • synthesize a scientific article by explaining the context, challenges, innovative results, potential applications as well as tracks for further work in the field, • communicate orally the results of a research to a public of computer scientists not experts in the field, • interact with a person who presents research results showing a critical and constructive look over the work presented.
Evaluation methods	**In first session:** Writing a group survey after reading 15 to 20 articles Review of two surveys from other groups Presentation of a research article Participation in class activities **In second session:** The student repeats all the activities of the first session alone, including those passed in the first session. The participation rating for class activities is cancelled. Please note: As this course is based on participation throughout the year, the notes for the activities will automatically be kept in the second session.

Teaching methods	Each student will play 3 different roles (in the different sessions): - presenter during a session - rapporteur for a new session - illustrator for yet another session The last two involve the writing of an individual report.
Content	The seminar will focus on articles that will be chosen (with students) from the following topics. 1. code security 2. blockchain (including smart contracts) 3. ecological programming 4. Privacy and finger printing 5. Test and generation of test cases 6. Automatic repair (or not) of programs 7. Detection of cloned software. 8. Composition programming 9. The legibility of the code 10. The malware analysis by artificial intelligence 11. Deep learning and coding / protection 12. Advanced techniques of concurrent programming. Students are free to propose new themes related to software engineering
Inline resources	https://moodleucl.uclouvain.be/course/view.php?id=12951
Bibliography	D. Schmidt, M. Stal, H. Rohnertand F. Buschmann.Pattern-Oriented Software Architecture ' Patterns for Concurrent and Networked Objects. Wiley, 2001. -- F. Buschmann, R. Meunier, H. Rohnert, P. Sommerlad and M. Stal. Pattern-Oriented Software Architecture ' A System of Patterns. Wiley, 1996. -- E. Gamma, R. Helm, R. Johnson, J. Vlissides, Design Patterns ' Elements of Reusable Object-Oriented Software.Addison-Wesley, 1995.
Other infos	The research seminar should be followed the same year as the "end of study work" because it is a methodological support to its realization. It is not necessary to select the option corresponding to the seminar in order to participate.
Faculty or entity in charge	INFO

Programmes containing this learning unit (UE)				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Computer Science and Engineering	INFO2M	3		🔍
Master [120] in Computer Science	SINF2M	3		🔍