



5.00 credits

30.0 h + 15.0 h

Q2

Teacher(s)	Pecheur Charles ;
Language :	English
Place of the course	Louvain-la-Neuve
Main themes	<ul style="list-style-type: none"> <li>• Software quality concepts</li> <li>• Program specification and correctness</li> <li>• Software testing</li> <li>• Software verification and validation</li> <li>• Software reviewing and audit</li> <li>• Software metrics and measurement</li> <li>• Software reliability</li> </ul>
Learning outcomes	<p><b>At the end of this learning unit, the student is able to :</b></p> <p>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:</p> <ul style="list-style-type: none"> <li>• INFO2.3-5</li> <li>• INFO6.3</li> </ul> <p>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:</p> <ul style="list-style-type: none"> <li>• SIN1.M3</li> <li>• SIN2.3-5</li> <li>• SIN6.3</li> </ul> <p>Students completing this course successfully will be able to:</p> <ol style="list-style-type: none"> <li>1.                     <ul style="list-style-type: none"> <li>• Define software quality and describe the role of quality assurance activities in the software process. '</li> <li>• Describe how a contract can be used to specify the behavior of a program component. '</li> <li>• Describe and distinguish among the different types and levels of testing (unit, integration, systems, and 'acceptance).</li> <li>• Apply a variety of strategies to the testing and debugging of simple programs.</li> <li>• Describe how available static and dynamic verification tools can be integrated into the software development 'environment. '</li> <li>• Apply formal specification and analysis techniques to software designs and programs with low complexity. '</li> <li>• Undertake an inspection of a medium-size code segment.</li> <li>• Compare simple software measurement techniques. '</li> <li>• Describe approaches for fault estimation. '</li> <li>• Explain the problems that exist in achieving high levels of software reliability. '</li> </ul> </li> </ol>
Evaluation methods	The course includes assignments, counting for 40% of the grade, and an exam, counting for 60% of the grade. Assignments cannot be redone for the September session; the grade remains acquired in September.
Inline resources	<a href="https://moodleucl.uclouvain.be/course/view.php?id=10913">https://moodleucl.uclouvain.be/course/view.php?id=10913</a>
Bibliography	<p>Les diapositives de cours ainsi que d'autres informations pertinentes et pratiques relatives au cours seront accessibles sur Moodle. La même plate-forme sera également le moyen de communication entre l'enseignant (s) et les étudiants.</p> <p>Lectures recommandées :</p> <ul style="list-style-type: none"> <li>• Software Quality Engineering: Testing, Quality Assurance, and Quantifiable Improvement. Jeff Tian. 2005, Wiley-IEEE Computer Society Press.</li> <li>• M. Pezzè and Michal Young, Software Testing and Analysis: Process, Principles, and Techniques, Wiley, 2008.</li> <li>• J. Laski, W. Stanley. Software Verification and Analysis. Springer 2009.</li> <li>• N.E. Fenton and S.L. Pfleeger. Software Metrics: A Rigorous and Practical Approach. 2nd edition, Thomson Computer Press, 1996.</li> </ul>

Other infos	<p>Background:</p> <ul style="list-style-type: none"> <li>• LINGI1101 : mathematical logic</li> <li>• LSINF1121 : master of object-oriented programming , algorithms and data structures</li> <li>• LSINF1225 : participating in the implementation of a small-size software project</li> </ul> <p>Having prior or simultaneous experience with the development of a medium- to large-scale software system.</p>
Faculty or entity in charge	INFO

<b>Programmes containing this learning unit (UE)</b>				
Program title	Acronym	Credits	Prerequisite	Learning outcomes
Master [120] in Computer Science and Engineering	INFO2M	5		
Master [120] in Biomedical Engineering	GBIO2M	5		
Master [120] in Computer Science	SINF2M	5		