Software Modeling and Verification				14X023
			Didier BUCHS (PO)	
Nombre d'heures par semaine	cours	2	Semestre d'automne	☒
	exercices	2	Semestre de printemps	
	pratique	2	Total d'heures	84

Cursus	Type	Crédits ECTS
Master en sciences informatiques (120 ECTS)	Obligatoire	6

OBJECTIFS :

This course covers several important aspects related to the modelling of software and how they can be formally verified. It is also the opportunity to explain the theoretical ground of these topics and how they can be practically applied.

CONTENU :

Modeling:

Data modelling with algebraic abstract data types and Petri nets for the dynamic part (mainly taught at the bachelor level: prerequisite)

Specification of Properties:

Equational logic and temporal logic CTL and LTL

Verification:

Proof of properties for algebraic abstract data types based on deduction systems and rewriting, study of properties of rewrite system.

Proof of properties for dynamic systems with the study of techniques for counteracting the combinatorial explosion due to the non-determinism such as symbolic model checking.

Partial verification methods based on test generation, test driver and test oracle.

Forme de l'enseignement	Integrated courses and exercises
Documentation	Handout and reference book list
Préalable requis	Génie logiciel, Outils formels, Sémantique des langages informatiques (cours de bachelor)
Préparation pour	-
Mode d'évaluation	Oral
Sessions d'examens	JF/AS