

## Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
INF323	Automata Theory and Formal Languages	6	3	0	0	3	4

Prerequisites	
Admission Requirements	

Language of Instruction	French
Course Type	Compulsory
Course Level	Bachelor Degree
Objective	Learn the basics of language theory Introduce the basics of computability, decidability and complexity.
Content	<ul style="list-style-type: none"><li>• Mathematical Review and Formal Foundations</li><li>• Deterministic Finite Automata (DFA)</li><li>• Nondeterministic Finite Automata (NFA)</li><li>• Regular Expressions and Kleene's Theorem</li><li>• Properties of Regular Languages</li><li>• Pumping Lemma for Regular Languages</li><li>• Minimization of Automata</li><li>• Context-Free Grammars (CFG)</li><li>• Pushdown Automata (PDA)</li><li>• Properties of Context-Free Languages</li><li>• Normalizations</li><li>• Turing Machines</li><li>• Undecidability</li><li>• Introduction to Complexity</li></ul>
References	- Introduction to Automata, Theory, Languages and Computation, J.E. Hopcroft, Jeffrey D. Ullman, Rajeev Motwan, Addison Wesley - Logique(s), langages formels et complexité pour l'informatique, Narendra Jussien, Hermes - Elements of Automata Theory, Jacques Sakarovitch , Cambridge University Press

## Theory Topics

Week	Weekly Contents
1	Mathematical Review and Formal Foundations
2	Deterministic Finite Automata (DFA)
3	Nondeterministic Finite Automata (NFA)
4	Regular Expressions and Kleene's Theorem
5	Properties of Regular Languages
6	Pumping Lemma for Regular Languages
7	Minimization of Automata
8	Mid Term
9	Context-Free Grammars (CFG)
10	Pushdown Automata (PDA)

<b>Week</b>	<b>Weekly Contents</b>
11	Properties of Context-Free Languages
12	Normalizations
13	Turing Machines
14	Undecidability