Content

Course Code	Course Name	Semester	Theory	Practice	Lab	Credit	ECTS
INF365	Communication and Multimedia	6	3	0	0	3	5

Prerequisites	
Admission Requirements	

Language of Instruction	French
Course Type	Elective
Course Level	Bachelor Degree
Objective	• The description of the models for the algorithmic reasoning of information flow, • The study of the effects of theoretical information models on current applications, • The reasoning of theoretical background of data structures through different scales, • Information coding, compression, channel capacity, information flow and related studies, consist the main concepts of the course.
Content	1.Week Algorithmic Complexity 2.Week P-NP Completeness 3.Week Information and Entropy 4.Week Relative Entropy, Mutual Information 5.Week Shannon's Effect 6.Week Compression Theory 7.Week Compression Algorithms 8.Week Midterm 9.Week Channel Capacity 10.Week Universal Source Coding 11.Week Lempel-Ziv Coding 12.Week Network Information Theory 13.Week Information Theory Inequalities 14.Week Statistical Techniques
References	1-Elements of Information Theory, Second Edition, Thomas M. Cover, Joy A. Thomas, Wiley-Interscience, 2006 2-Computational Complexity, S. Arora, B. Barak, Cambridge University Press, 2009

Theory Topics

Week	Weekly Contents
1	Algorithmic Complexity
2	P-NP Completeness
3	Information and Entropy
4	Relative Entropy, Mutual Information
5	Shannon's Effect
6	Compression Theory
7	Compression Algorithms
8	Midterm
9	Channel Capacity
10	Universal Source Coding

Week	Weekly Contents
11	Lempel-Ziv Coding
12	Network Information Theory
13	Information Theory Inequalities
14	Statistical Techniques