

**Academic year 2022-2023**  
**Master in Advanced Studies in Computer Science**  
**Year 1 (class 2022-2024)**

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**Semester 1**

*Compulsory courses*

**Exploratory Research** 7.5 ECTS  
C: 2 S: 2 L: Ex: EVP

*Optional courses: 3 out of 27*

**Web Application Development** 7.5 ECTS  
C: 2 S: 2 L: Ex: E

**Computer Vision** 7.5 ECTS  
C: 2 S: 2 L: Ex: EVP

**Software Security** 7.5 ECTS  
C: 2 S: 2 L: Ex: E

**Advanced Software Engineering Techniques** 7.5 ECTS  
C: 2 S: 2 L: Ex: E

**Java Technologies** 7.5 ECTS  
C: 2 S: 2 L: Ex: E

**Security of Electronic Commerce** 7.5 ECTS  
C: 2 S: 2 L: Ex: E

**Semantics and Pragmatics of Natural Language** 7.5 ECTS  
C: 2 S: 2 L: Ex: E

**Advanced Topics in Neural Networks** 7.5 ECTS  
C: 2 S: 2 L: Ex: E

**Computational statistics** 7.5 ECTS  
C: 2 S: 2 L: Ex: EVP

**Deep Learning with Applications in NLP** 7.5 ECTS  
C: 2 S: 2 L: Ex: E

**Operational Research** 7.5 ECTS  
C: 2 S: 2 L: Ex: E

**Formal Methods in Software Engineering** 7.5 ECTS  
C: 2 S: 2 L: Ex: EVP

**Reverse Engineering** 7.5 ECTS  
C: 2 S: 2 L: Ex: E

<b>Blockchain - Foundations and Applications</b>	7.5 ECTS
C: 2 S: 2 L: Ex: E	
<b>Automated and Interactive Reasoning</b>	7.5 ECTS
C: 2 S: 2 L: Ex: E	
<b>Operating System Security and Malicious Systems</b>	7.5 ECTS
C: 2 S: 2 L: Ex: E	
<b>Distributed Operating Systems</b>	7.5 ECTS
C: 2 S: 2 L: Ex: E	
<b>Advanced Techniques in Cryptography</b>	7.5 ECTS
C: 2 S: 2 L: Ex: E	
<b>Cryptanalysis</b>	7.5 ECTS
C: 2 S: 2 L: Ex: E	
<b>Wireless and Mobile Security</b>	7.5 ECTS
C: 2 S: 2 L: Ex: E	
<b>Computational Lexicology, Morphology and Syntax</b>	7.5 ECTS
C: 2 S: 2 L: Ex: E	
<b>Innovative Applications of Natural Language Processing in an Entrepreneurial Context</b>	7.5 ECTS
C: 2 S: 2 L: Ex: EVP	
<b>Quantum Computing</b>	7.5 ECTS
C: 2 S: L: 2 Ex: EVP	
<b>Calculability, Decidability, and Complexity</b>	7.5 ECTS
C: 2 S: 2 L: Ex: EVP	
<b>Machine Translation</b>	7.5 ECTS
C: 2 S: 2 L: Ex: E	
<b>Big Data Analytics</b>	7.5 ECTS
C: 2 S: 2 L: Ex: E	
<b>Nature Inspired Methods</b>	7.5 ECTS
C: 2 S: 2 L: Ex: E	

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## Semester 2

### *Compulsory courses*

<b>Formal Research I</b>	7.5 ECTS
C: 2 S: 2 L: Ex: EVP	

### *Optional courses: 3 out of 15*

<b>Pragmatic Aspects in Engineering of Cloud Systems</b>	7.5 ECTS
C: 2 S: 2 L: Ex: EVP	

<b>Software Quality</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Experimental Analysis of Algorithms</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Advanced Topics in Computer Vision</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Security Protocols. Modelling and Verification</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>System Specification and Verification</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Advanced Topics of Machine Learning</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Data Mining</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Models of Distributed Systems</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Concurrent and Distributed Programming</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: EVP		
<b>Event-based Systems</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Security models</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Network security</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Statistical Natural Language Processing</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Virtual Assistants</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		

**Academic year 2022-2023**  
**Master in Advanced Studies in Computer Science**  
**Year 2 (class 2021-2023)**

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**Semester 1**

*Compulsory courses*

<b>Formal Research II</b>	7.5 ECTS
C: 2    S: 2    L:    Ex: EVP	

*Optional courses: 3 out of 29*

<b>Experimental Analysis of Algorithms</b>	7.5 ECTS
C: 2    S: 2    L:    Ex: E	

<b>Web Application Development</b>	7.5 ECTS
C: 2    S: 2    L:    Ex: E	

<b>Computer Vision</b>	7.5 ECTS
C: 2    S: 2    L:    Ex: EVP	

<b>Software Security</b>	7.5 ECTS
C: 2    S: 2    L:    Ex: E	

<b>Advanced Software Engineering Techniques</b>	7.5 ECTS
C: 2    S: 2    L:    Ex: E	

<b>Java Technologies</b>	7.5 ECTS
C: 2    S: 2    L:    Ex: E	

<b>Hardware cryptography</b>	7.5 ECTS
C: 2    S: 2    L:    Ex: E	

<b>Security of Electronic Commerce</b>	7.5 ECTS
C: 2    S: 2    L:    Ex: E	

<b>Belief Logics in Information Security</b>	7.5 ECTS
C: 2    S: 2    L:    Ex: E	

<b>Semantics and Pragmatics of Natural Language</b>	7.5 ECTS
C: 2    S: 2    L:    Ex: E	

<b>Virtual assistants</b>	7.5 ECTS
C: 2    S: 2    L:    Ex: E	

<b>Advanced Topics in Neural Networks</b>	7.5 ECTS
C: 2    S: 2    L:    Ex: E	

<b>Special Chapters on Artificial Intelligence</b>	7.5 ECTS
C: 2    S: 2    L:    Ex: EVP	

<b>Operational Research</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Formal Methods in Software Engineering</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: EVP		
<b>Reverse Engineering</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Blockchain - Foundations and Applications</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Automated and Interactive Reasoning</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Operating System Security and Malicious Systems</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Distributed Operating Systems</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Quantum Computing</b>					7.5 ECTS
C: 2	S:	L: 2	Ex: EVP		
<b>Big Data Analytics</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Advanced techniques in cryptography</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Cryptanalysis</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Wireless and Mobile Security</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Computational Lexicology, Morphology and Syntax</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Applications of Natural Language Processing</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: EVP		
<b>Machine Translation</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		
<b>Deep Learning with Applications in NLP</b>					7.5 ECTS
C: 2	S: 2	L:	Ex: E		

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## Semester 2

### *Compulsory courses*

<b>Ethics and Academic Integrity</b>					5 ECTS
C: 1	S:	L:	Ex: EVP		

**Professional/Research Practice**

12 ECTS

C: S: L: 6 Ex: EVP

**Methodology for Dissertation Development**

13 ECTS

C: S: L: 7 Ex: EVP