

# Masters in Computer Science: Curriculum Structure (120 ECTS)

## **1. Core (or foundations) module (24)**

MTAT.03.238 Advanced Algorithmics (6) (fall)  
MTAT.05.008 Discrete Mathematics (6) (fall)  
MTAT.08.009 Distributed Systems (6) (fall)  
MTAT.03.183 Data Mining (6) (fall)

## **3. Master's seminar (12)**

MTAT.05.116 Algorithms and Theory Seminar (12)  
MTAT.03.242 Bioinformatics Seminar (12)  
MTAT.03.305 Computer Graphics Seminar (12)  
MTAT.08.024 Distributed Systems Seminar (12)  
MTAT.03.280 Mobile and Cloud Computing Seminar (12)  
MTAT.03.271 Programming Language Research Seminar (12)  
MTAT.07.022 Research Seminar in Cryptography (12)  
MTAT.03.277 Research Seminar in Data Mining (12)  
MTAT.03.292 Seminar in Computational Neuroscience (12)  
MTAT.03.287 Seminar on Business Intelligence (6)  
MTAT.06.046 Seminar on Natural Language Processing (12)  
MTAT.03.276 Special Assignment in Bioinformatics (3)  
MTAT.07.027 Special Assignment in Coding Theory (3)  
MTAT.07.020 Special Assignment in Cryptography (3)  
MTAT.03.275 Special Assignment in Data Mining (3)  
MTAT.08.034 Special Assignment in Distributed Systems (3)  
MTAT.06.047 Special Assignment in Natural Language Processing (3)  
MTAT.03.272 Special Assignment in Programming Languages (3)  
MTAT.05.124 Special Assignment in Theoretical Computer Science (3)  
MTAT.03.309 Special Assignment in Wireless Communication (3)  
MTAT.03.317 Special course in Machine Learning (24)

**Min (6) conformably with Specialization module!**

## **2. Specialization modules**

- 2.1. Distributed Systems (24)
- 2.2. Programming languages (24)
- 2.3. Natural language processing (24)
- 2.4. Cryptography and Theoretical Informatics (24)
- 2.5. Data mining (24)

## **4. Electives module (12)**

(12) from the list of courses taught on the master's level at UT ICS

## **5. Optional courses (6)**

(6) from the whole range of UT courses

## **6. Practice module (12)**

MTAT.00.023 Didactic Practice (6)  
MTAT.03.300 Didactics of Informatics I (3)  
MTAT.03.301 Didactics of Informatics II (3)  
OR  
MTAT.03.206 Practical Training in Information Technology (12)  
OR  
MTAT.03.278 Software Entrepreneurship Project (12)

## **7. Master's thesis (30)**

## 2.1. Distributed systems (24)

MTAT.08.027 Basics of Cloud Computing (3) (spring)  
MTAT.08.022 Concurrent Programming Languages (6) (spring, E)  
MTAT.03.229 Enterprise System Integration (6) (spring 2016)  
MTAT.08.040 Introduction to Intelligent Transportation Systems (6) (spring)  
MTAT.03.262 Mobile Application Development (3) (fall)  
MTAT.03.266 Mobile Application Development. Project (3)  
MTMM.00.005 Numerical Methods (6) (spring)  
MTAT.08.020 Parallel Computing (6) (fall 2016)  
MTAT.08.010 Scientific Computing (6) (fall 2017)  
MTAT.08.037 Scientific Computing Infrastructures (3) (spring, E)

## 2.2. Programming languages (24)

MTAT.08.022 Concurrent Programming Languages (6) (spring, E)  
MTAT.03.274 Formal Methods in Software Engineering (6) (fall)  
MTAT.05.106 Functional Programming (6) (spring 2017)  
MTAT.05.103 Logic Programming (6) (fall 2016)  
MTAT.08.020 Parallel Computing (6) (fall 2016)  
MTAT.05.108 Semantics of Programming Languages (6) (spring 2016)

## 2.3. Natural language processing (24)

LTAT.01.001 **Natural Language Processing** (6 ECTS) (fall)  
MTAT.06.055 Machine Translation (6 ECTS) (fall)  
MTAT.06.048 Intelligent Systems (6 ECTS)(spring)  
MTAT.06.057 Computational semantics (3 ECTS) (spring)  
*FLEE.08.052 Introduction into Computational Morphology (3) (fall)*  
MTAT.06.031 Syntactic Theories and Models (6 ECTS) (fall)

## 2.4. Cryptography and Theoretical Informatics (24)

MTAT.03.286 Advanced Methods in Algorithms (6)  
MTAT.05.120 Combinatorial and Convex Optimization (6)  
MTAT.07.004 Complexity Theory (6)  
MTAT.07.014 Cryptographic Protocols (6)  
MTAT.07.002 Cryptology I (6)  
MTAT.07.003 Cryptology II (6)  
MTAT.05.123 Graphs, Networks and Algorithms (6)  
MTAT.05.082 Introduction to Coding Theory (6)  
MTAT.05.002 Mathematical Logic and Algorithm Theory (6)  
MTAT.05.121 Methods in Theoretical Computer Science (24 ECTS)  
MTAT.07.024 Quantum Cryptography (6)

## 2.5. Data mining (24)

MTAT.03.239 Bioinformatics (6) (spring)  
MTAT.03.291 Introduction to Computational Neuroscience (6) (spring)  
MTAT.03.227 Machine Learning (6) (spring)  
MTMS.01.088 Multivariate Analysis (6) (spring)  
LTAT.02.001 **Neural Networks** (6) (spring)  
LTAT.01.001 **Natural Language Processing** (6 ECTS) (fall)

<http://courses.cs.ut.ee>