

CURRICULUM

The students must pass minimum 8 (and maximum 12) courses in the first four semesters of the program. There are four obligatory courses, two research area specific and two research topic (sub-area) specific courses in the list. Each non-optional course has a credit value 5.

Course	Semester
Obligatory 1	1
Obligatory 2	1
Obligatory 3	2
Obligatory 4	2
Research area-specific 1	3
Research area-specific 2	3
Research topic-specific 1	4
Research topic-specific 2	4
Optional 1-4	1-4

The main obligatory courses cover the mathematical foundations:

- Discrete Mathematics I
- Theory of Algorithms
- Mathematical Logic with Applications
- Paradigms of Programming

Study areas in the Doctoral School:

(1) Applied Computer Science Area

Research area-specific courses:

Combinatorial Algorithms, - Methods for Differential Equations - Ontology
Management Systems - Parallel Algorithms - Modern Analysis

Research topic-specific courses

- (A) Complexity of Algorithms
- (B) Theory and technology of data mining
- (C) Soft Computing
- (D) Computer Graphics

(2) Information Science for Production Engineering Area

Research area-specific courses:

Theory of Manufacturing Processes and Systems - Principles, Models and
Methods in Computer Integrated Manufacturing

Research topic-specific courses

- (A) Modelling of Manufacturing Processes
- (B) Information Systems in Control Engineering

(3) Any Material Flow Systems Area

Research area-specific courses:

Theory of Material Handling Systems - Theory of Logistics

Research topic-specific courses

- (A) Logistic of Supply Systems
- (B) Logistic of Production Systems

Detailed list of the courses

Area codes: A: Theoretical Foundations, SZT: Applied Computer Science, TR: Information Science for Production Engineering, LR: Material Flow Systems

course	Institute	area	semester
Computational Intelligence	INFO	SZT	A
Computer aided modeling of curves and surfaces	MAT	SZT	S
Data Mining: Theory and Practice	INFO	SZT	S
Discrete Mathematics I.	MAT	A	S
Embedded systems and Architectures	AUT	SZT	A/S
Fuzzy Systems	INFO	SZT	S
Global logistics	LOG	LR	A/S
Information Technology of Logistics	LOG	LR	A/S
Logistics of manufacturing systems	LOG	LR	A/S
Logistics of Quality Assurance, Product Logistics	LOG	LR	A
Mathematical Logic with Application	MAT	A	
Mathematical models of logistics	LOG	LR	
Modelling of Production Processes	INFO	TR	A/S
Nature Inspired Optimization Algorithms	INFO	SZT	A
On chip modelling and design methods	AUT	SZT	A/S
Ontology-based Data Models	INFO	SZT	A

Paradigms of Programming	INFO	A	
Procurement and Distribution Logistics	LOG	LR	S
Production logistics	LOG	LR	A/S
Production Systems and Processes	INFO	TR	A/S
Recycling Logistics	LOG	LR	A/S
Selected topics in Operating Systems	INFO	SZT	S
Service logistics	LOG	LR	S
Software Defined Networking	INFO	SZT	S
Speech Information Systems	AUT	SZT	A
Telecommunication in Control Engineering	AUT	SZT	S
Theory of Algorithms	MAT	A	
Theory of Logistics Systems	LOG	LR	S
Theory of Material Flow Systems	LOG	LR	A
Transportation-Forwarding	LOG	LR	