



Joint Curricula Master Degree Program

Intelligent Data Processing

Participating Institutions: Kaiserslautern University of Technology (Kaiserslautern, Germany) – TUKL and Kazan National Research Technical University named after A.N. Tupolev-KAI (Kazan, Russia) – KNRTU-KAI.

Duration of Study: 2 years.

Place for Study: 1st, 2nd semesters at KNRTU-KAI, 3rd semester at Kaiserslautern University of Technology, 4th semester at KNRTU-KAI or Kaiserslautern University of Technology.

1st semester

Module	Credits of module	Contact hours	Individual work hours	Exams	Total student workload	Forms of final examination	Department	*
Nonlinear Optimization	9	72	144	36	252	Exam	KNRTU-KAI	FF
Concurrency Theory	8	48	96	36	180	Exam	KNRTU-KAI	CST
Fundamentals of Embedded Systems. Part I	3	36	36		72	Graduate test	KNRTU-KAI	Sp2
Architecture of parallel computing systems	2	36	72	36	144	Exam	KNRTU-KAI	SB
Artificial Neural Networks	3	48	60		108	Graduate test	KNRTU-KAI	SB
Philosophical problems of science and technology	2	36	72	36	144	Exam	KNRTU-KAI	SB
Time management and control of the project team	2	36	36		72	Graduate test	KNRTU-KAI	SB
Research Skills Seminar	2	36	72		108	Graduate test	KNRTU-KAI	SB
Total	31				1080			

2nd Semester

Module	Credits of module	Contact hours	Individual work hours	Exams	Total student workload	Forms of final examination	Department	
Document and Content Analysis	4	36	36	36	108	Exam	KNRTU-KAI	Sp1
Embedded Intelligence	4	36	72		108	Graduate test	KNRTU-KAI	Sp1
Fundamentals of Embedded Systems. Part II	5	36	72	36	144	Exam	KNRTU-KAI	Sp2
Parallel Computing	4	36	36		72	Graduate test	KNRTU-KAI	Sp2
Business English	2	36	36		72	Graduate test	KNRTU-KAI	SB
Methods and tools of software engineering	3	48	72	36	180	Exam	KNRTU-KAI	SB
Development of advanced CAD systems	2	36	72	36	144	Exam	KNRTU-KAI	SB
Elective module 1 (one of the following):	4	36	36		72	-	-	-
1. Computer Vision	(4)	(36)	(36)		(72)	(Graduate test)	KNRTU-KAI	SB
2. Foundations in Mathematical Image Processing	(4)	(36)	(36)		(72)	(Graduate test)	KNRTU-KAI	SB
3. Systems of Pattern Recognition	(4)	(36)	(36)		(72)	(Graduate test)	KNRTU-KAI	SB
Curricular Practical Training	3		180		180	Graduate test	KNRTU-KAI	SB
Total	31				1080			



3rd semester

Module	Credits of module	Contact hours	Individual work hours	Exams	Total student workload	Forms of final examination	Department	
The Project	8	12	168		180	Graduate test	TUKL	Sp1
The Seminar	4	24	372		396	Graduate test	TUKL	Sp1
Elective module 2 (four of the following):	16	144	144	144	432	–	–	–
1. Applications of Machine Learning and Data Science	(4)	(36)	(36)	(36)	(108)	(Exam)	TUKL	Sp1
2. Very Deep Learning - Recent Methods and Technologies	(4)	(36)	(36)	(36)	(108)	(Exam)	TUKL	Sp1
3. 3D Computer Vision	(4)	(36)	(36)	(36)	(108)	(Exam)	TUKL	Sp1
4. Methods for modeling and recording human motion	(4)	(36)	(36)	(36)	(108)	(Exam)	TUKL	Sp1
5. Continuous models of complex systems	(4)	(36)	(36)	(36)	(108)	(Exam)	TUKL	Sp1
Total	28				1008			

4th semester

Module	Credits of module	Contact hours	Individual work hours	Exams	Total student workload	Forms of final examination	Department	
Master Thesis	30				1080	-	KNRTU-KAI / TUKL	MT
Total	30				1080			

On behalf of TU Kaiserslautern



 Prof. Dr. Helmut J. Schmidt,
 President

 Prof. Dr. Stefan Deßloch,
 Dean of Department of Computer Science

On behalf of KNRTU-KAI-KAI



 Prof. Albert Gilmutdinov,
 Rector

 Dr. Vladimir Tregubov,
 Director of Institute for Computer Technologies
 and Information Protection

 Dr. Sergey Zaydullin,
 Coordinator of the MSc Program

* Designations: CST – Computer Science Theory, FF – Formal Fundamentals, Sp1 – Specialization 1 "Intelligent Systems", Sp2 – Specialization 2 "Embedded Systems and Robotics", SB – Supplementary Block, MT – Master Thesis.