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**AGREEMENT
FOR THE DOUBLE DEGREE MASTER PROGRAM
IN DATA SCIENCE
BETWEEN
ULM UNIVERSITY (GERMANY)
AND
V. N. KARAZIN KHARKIV NATIONAL UNIVERSITY (UKRAINE)**

1. Background

On the basis of equality and mutual benefits, Ulm University registered at Helmholtzstraße 16, 89069 Ulm, Germany, and through the Faculty of Mathematics and Economics, hereafter referred to as ULM, which is the executive body of this agreement bound by the rights and obligations specified here, and V. N. Karazin Kharkiv National University registered at 4, Maidan Svobody, Kharkiv 61022, Ukraine, through the School of Mathematics and Computer Sciences, hereafter referred to as KGNU, which is the executive body of this agreement bound by the rights and obligations specified here, will organize and implement the Double Degree Professional Master Program in Data Science.

Whereas, in consideration of the premises, terms and conditions herein provided, both parties agree as follows:

2. Aim

The double degree professional master program in the field of data science between ULM and KGNU offers very qualified students the chance to enhance their knowledge and intercultural understanding; thus, students gain better profiles and international employability.

After two years' study in the program and successful completion of all the required courses and the Master thesis as stipulated in the curriculum, students enrolled in the program will be awarded with two degrees respectively: *Master of Science* (according to the Master program in Mathematical Data Science) by ULM and *Master of Science* (KGNU students enrolled in the Master programs in Data Science) by KGNU.

3. Organization and Administration of the Program

The double degree program will be executed by the two parties. ULM will be responsible for the events taking place at ULM, including the organization and administration of courses, credits, theses, etc., while KGNU will take the same responsibility for the relevant events taking place at KGNU.

A program committee will be formed, consisting of 4 representatives, including a director of academic affairs and a coordinator for the program from each party:

From ULM: Prof. Dr. Evgeny Spodarev, Dr. Mikhail Chebunin

From KGNU: PD Dr. Anastasiia Morozova, PD Dr. Ievgen Meniaiov

Each university will timely notify the partner university in writing if there is any change in the composition of the above committee.

The committee will hold regular meetings to offer both academic and administrative advice on the program, and provide guidance to the administrative staff regarding the implementation, coordination and development of the program.

Students sent by the two parties must strictly abide by the laws and regulations of the locality, and the disciplines and rules of the host institution.

4. Start-Up Time and the Size of Enrolment

The expected annual intake target is about 5 students. The size of each cohort may be adjusted by mutual written agreement between the Parties.

The first cohort after the initiation of the Program is planned to be enrolled in the winter term 2026.

5. Duration

This full-time program lasts two years.

Students will spend their first year of studies at the home university, after this year of studies the students will continue their studies for another academic year at the partner university; the home university will recognize credits that the students have obtained at the partner university and transfer required courses among them according to its own credit system. The partner universities will recognize and transfer the required credits that the students have obtained at the home university in accordance with Appendix 2. The final term before graduation will be spent at the partner university to write the Master thesis.

The credit value of the courses has been determined in cooperation between ULM and KGNU program coordinators and is based on the ECTS in order to simplify the transfer of the credits. Details of the study plan will be set out in Appendix 2 to this Agreement.

Each university will provide, in a timely fashion, the partner university with the transcript of the credits and grades obtained by the students during the period of study in its own

university; the credits and grades contained in the transcript will be converted into the credit/grades system of the home university. The conversion table is set out in Appendix 3 to this agreement.

6. Selection and Admission of the Candidates

The process of selection and admission will be executed in accordance with the relevant regulations of both parties by the joint committee of partner universities.

Both parties are responsible for the selection of the candidates and admission to the double degree program. ULM and KGNU will accept the number of students from each university participating who

- meet the undergraduate admission requirements of the Master in Data Science at KGNU;
- meet the undergraduate admission requirements of Master in Mathematical Data Science at ULM;
- have a sufficient knowledge of English (B2 level or higher), allowing them to study in English at ULM and at KGNU, usually confirmed by an official language test certificate.
- belong to the best 15% of all the students of one semester; their sufficient mathematical skills' level will be additionally tested by the partner university in oral or written form.
- complete the application procedures required by ULM and KGNU.

KGNU and ULM will issue admission letters respectively to the qualified candidates.

7. Curriculum

All courses of the Program, taught at KGNU and ULM will be given in English.

Details of the curriculum will be set out in Appendix 2 to this agreement. The semester subjects' distribution may vary each year in both Universities, therefore, the Appendix 2 will be updated if necessary.

The students have to inform themselves about the current requirements for the award of the respective degrees and to select the modules and courses they attend accordingly. Appendix 1 is the study and examination regulations at ULM. It is the list of modules that students have to attend successfully to obtain the degree Master of Science at ULM according to the examination rules in force. Appendices 4 and 5 provide tables of elective courses for the students enrolled in the Double Degree Program.

8. Degree Thesis

Both parties will assign supervisors for joint supervision of the students' theses, which must meet the degree thesis requirements set by both universities. The thesis defense will be conducted by each party, respectively, according to its own regulations.

9. Enrolment, Tuition Fee Arrangement, Responsibilities of Students, Scholarships

Admitted students will be enrolled both at ULM and KGNU throughout the program.

ULM and KGNU will not charge tuition fees. Admitted students will pay tuition and other fees at his/her Home University during the Double Degree Program. No tuition fees shall be payable to the Host University.

Other expenses, such as travelling, accommodation (food & board), books, etc., will be borne by the students themselves.

Students are responsible for their own health insurance. Private liability insurance is recommended; however, while attending classes and events in the campus of ULM, students are covered by the accident insurance of ULM.

Should national or multilateral funds be available, KGNU and ULM will place scholarships for the students admitted to this program.

10. Rights and Obligations of Both Parties

Rights and Obligations of ULM

1. ULM will be responsible for the events taking place at ULM including the organization and administration of courses, credits, theses, etc.
2. ULM will assist the students with the German visa procedure and other related administrative procedures.
3. ULM will help students find accommodation in the university residence, and the students will be responsible for all living costs.
4. ULM will assist the students with the related administrative procedures in Europe.

Rights and Obligations of KGNU

1. KGNU will be responsible for the events taking place at KGNU including the organization and administration of courses, credits, theses, etc.
2. KGNU will help students find accommodation during their study at KGNU, and the students will be responsible for all living costs.
3. KGNU shall assist students with passport and visa application procedures.

All above mentioned administrative services in conformity with this agreement shall be provided on equal basis. The participants on exchanges shall not bear payments for such services at the partner universities.

11. Academic and Degree Issues

The Professional Degree of Master of Science awarded by KGNU is an official degree accredited by the Ministry of Education and Science of Ukraine, and Master of Science awarded by ULM is an official degree according to 36 Abs. 1 Landeshochschulgesetz Baden – Württemberg.

The terms, conditions and procedure for the liquidation of academic debts in the home institution are governed by the internal regulations of each institution.

Each student participating in the program is obliged to submit a report at the home institution after participation in the program.

KGNU and ULM will issue the degrees to their students, respectively, according to their own graduation requirements.

12. Agreement Renewal

This agreement will enter into effect on the date the two parties sign (after the last signature) and will be valid for five years. The two parties shall decide on the renewal or termination of the agreement within six months from the date of enrollment of the fifth cohort of students. If the two parties do not reach consensus within this time frame, no further students will be recruited.

Student Protection (Grandfathering):

In the event of termination or non-renewal of this Agreement, no new students shall be admitted to the Double Degree Program after the effective date of such termination or non-renewal. However, both Parties shall continue to fulfill their obligations under this Agreement towards students who have already been admitted to the Double Degree Program before the effective date of termination or non-renewal (“grandfathered students”). Grandfathered students shall be allowed to complete the Double Degree Program under the conditions that were applicable at the time of their admission, including the agreed study structure, recognition of credits and examination requirements, unless changes are required by mandatory law or decisions of the competent university authorities. The Parties shall cooperate in good faith to ensure that grandfathered students can complete their studies within the regular study period. Any necessary transitional arrangements for grandfathered students shall be agreed in writing between the Parties.

13. Data Protection and Data Transfers

1) Each Party shall process personal data of students and staff in compliance with the applicable data protection laws. For Ulm University this includes, in particular, Regulation (EU) 2016/679 (General Data Protection Regulation – GDPR) and the relevant national data

protection laws; for V. N. Karazin Kharkiv National University this includes the applicable Ukrainian data protection legislation.

2) The Parties act as separate controllers with respect to the personal data they process for the purposes of this Double Degree Program. Where the Parties jointly determine the purposes and means of processing, they shall, where required by law, conclude an appropriate joint-controller agreement in accordance with Article 26 GDPR, defining their respective responsibilities and ensuring transparency towards the data subjects.

3) The Parties will exchange personal data of students only to the extent necessary for:

- admission to and administration of the Double Degree Program,
- organization of studies and examinations,
- recognition and transfer of credits and grades,
- preparation and issuance of degree certificates and transcripts,
- fulfillment of reporting obligations towards public authorities where required by law.

4) The categories of personal data processed and exchanged may include, in particular, name, contact details, date of birth, matriculation numbers, study program, enrollment status, examination results, credits and grades, and information required for the issuance of certificates.

5) Transfers of personal data from Ulm University to V. N. Karazin Kharkiv National University, as a recipient located in a third country from the perspective of the GDPR, shall only take place if and to the extent that the requirements of Articles 44 ff. GDPR are fulfilled. Where required, the Parties shall implement appropriate safeguards pursuant to Article 46 GDPR (e.g. standard contractual clauses adopted by the European Commission) and provide data subjects with the information required by Articles 13 and 14 GDPR.

6) Each Party shall ensure appropriate technical and organizational measures to protect personal data against accidental or unlawful destruction, loss, alteration, unauthorized disclosure or access, taking into account the state of the art, the costs of implementation and the nature, scope, context and purposes of processing.

7) The Parties shall inform each other without undue delay of any personal data breach which is likely to affect students participating in the Double Degree Program, and shall cooperate, to the extent reasonably possible, in handling such incidents in accordance with the applicable data protection laws. The Parties shall inform students, in a clear and transparent manner, about the processing of their personal data and their rights under the applicable data protection laws. Where required by law, they shall obtain any necessary consents from the students prior to the processing or transfer of personal data.

14. Applicable Laws and Settlement of Disputes

The Parties shall use good faith efforts to resolve any dispute arising out of or in relation to

this Agreement. In the event that any dispute cannot be resolved through negotiation then the two parties should decide on independent mediation to make it settled.

15. Other Issues

To address issues not covered by this Agreement, a more detailed supplementary agreement may be signed by both parties.

In case of failure to fulfill any of the obligations under this agreement due to force majeure or any event beyond the control of the two parties, the parties shall not be responsible for any losses thus incurred. Neither party shall compensate for any direct, consequential, or special losses pertinent to issues not covered by this agreement, unless otherwise specified in this agreement.

This agreement has been prepared in two original English copies all being equally authentic.

The signatories below confirm that both parties agree to abide by and execute the above terms and conditions.

For ULM

Prof. Dr. Robert Stelzer

Dean

For KGNU

PD Dr. Ievgen Meniaailov

Dean

Date July 22nd, 2026

Date August 4, 2026

Prof. Dr.-Ing. Michael Weber

President

Prof. Tetyana Kaganovska

Rector



Date 4. August 2026

Date August 4, 2026

Appendix

Appendix 1: Study and Examination Regulations at ULM.

Study Content and Admission to Module Examinations

The following modules must be completed:

1. Mathematics of Machine Learning (9 ECTS)
2. Numerical Methods for Data Science (6 ECTS)
3. Practical Foundations of Data Science (5 ECTS)
4. Data Lab (5 ECTS)
5. Master's Thesis (30 ECTS)

At least 5 ECTS must be selected from modules in Functional Analysis and other relevant topics in Analysis; the module Functional Analysis for Data Science is recommended.

At least 9 ECTS must be selected from modules in Mathematical Statistics and other advanced topics in statistics; the module Mathematical Statistics is recommended.

At least 8 ECTS must be completed in each of the areas Mathematical Data Science and Application Sciences. In total, at least 55 ECTS must be obtained from the areas Functional Analysis, Mathematical Statistics, Mathematical Data Science, and Application Sciences.

If a course from one university is already recognized as equivalent to a course at the partner university, it may not be taken again at the other university.

Appendix 2: Curriculum

- I. For the students from KGNU enrolled in this Double Degree Program the details of the courses and credits are as follows:

Course offered by KGNU	ECTS	Semester	Credited at ULM as	ECTS
Functional Analysis for Data Analysis	5 ¹	Semester 1	Functional Analysis for Data Science	5
Mathematical Statistics	5	Semester 1	Mathematical Statistics	5
Machine Learning: Theory and Algorithms I	6	Semester 1	Mathematics of Machine Learning (part 1)	6
Databases and Data Storages Technologies	5	Semester 1	Practical Foundations of Data Science	5
Scientific Research Course Work	3	Semester 1	Data Lab (part 1)	2
Global Problems of the Present	3	Semester 1	Ethics and technology	3

¹ The credits earned at ULM and KGNU are European credits.

EU 1	3	Semester 1	Compulsory elective modules	5
Machine Learning: Theory and Algorithms II	5	Semester 2	Mathematics of Machine Learning (part 2)	3
Numerical Methods for Data Analysis	5	Semester 2	Numerical Methods for Data Science	6
Big Data Processing	5	Semester 2	Application Sciences	5
Parallel and Distributed Computing	6	Semester 2	Mathematical Data Science	6
EU 2	6	Semester 2	Mathematical Statistics	6
Scientific Research Course Work	3	Semester 2	Data Lab (part 2)	3
Course offered by ULM	ECTS	Semester	Credited at KKNU as	ECTS
Seminar	4	Semester 3	Seminar	4
Interdisciplinary competence and language skills (ASQ)	3	Semester 3	Professional language skills	3
Compulsory elective modules	23	Semester 3	Elective units	23
Master Thesis ²	30	Semester 4	Scientific and Research Practice	20
			Prediploma Practice (on-the-job)	6
			Qualification Thesis Preparation	4

II For the students from ULM enrolled in this Double Degree Program the details of the courses and credits are as follows:

Course offered by ULM	ECTS	Semester	Credited at KKNU as	ECTS
Mathematics of Machine Learning	9	Semester 1	Machine Learning: Theory and Algorithms I + II	11
Practical Foundations of Data Science	5	Semester 1	Databases and Data Storages Technologies	5
Functional Analysis ³	5	Semester 1	Functional Analysis for Data Analysis	5
Mathematical Statistics ⁴	9	Semester 1	Mathematical Statistics	5
			EU 2	4

² The master thesis submitted to KKNU/ULM has to be written in English. Grades and acceptance decisions of a thesis will be independently performed by the thesis supervisors from KKNU/ULM.

³ Choose from modules on Functional Analysis and other relevant topics from Analysis with at least 5 CP; the module Functional Analysis for Data Science is recommended.

⁴ Choose from modules on Mathematical Statistics and other topics from advanced statistics with at least 9 CP;

Ethics and technology	3	Semester 1	Global Problems of the Present	3
Numerical Methods for Data Science	6	Semester 2	Numerical Methods for Data Analysis	5
Data Lab	5	Semester 2	Scientific Research Course Work I+II	6
Compulsory elective modules in accordance with the exam regulations ⁵	18	Semester 2	Elective units	16
Course offered by KGNU	ECTS	Semester	Credited at ULM as	ECTS
Elective units in accordance with the exam regulations	23	Semester 3	Compulsory elective modules	23
Seminar	4	Semester 3	Seminar	4
Professional language skills	3	Semester 3	Interdisciplinary competence and language skills	3
Scientific and Research Practice	20	Semester 4	Master's Thesis	30
Prediploma Practice	6	Semester 4		
Qualification Thesis Preparation	4	Semester 4		

Appendix 3: Conversion table for the grades.

ECTS Grade	Interpretation	KGNU	ULM
A	excellent	90-100 %	1
B	very good	82-89 %	1.3
C	good	75-81 %	1.7-2.3
D	satisfactory	67-74 %	2.7-3.3
E	sufficient	60-66 %	3.7-4
F/FX	fail	<60 %	5

Appendix 4: Compulsory Elective and Complementary Course Areas at ULM.

The following tables provide suitable courses for the respective subject areas. In accordance with the study regulations at ULM, courses for these areas may be selected from the Mathematical Data Science program at ULM.

the module Mathematical Statistics is recommended.

⁵ At least 8 ECTS each from Mathematical Data Science and Application sciences. At least 55 ECTS total in Functional Analysis, Mathematical Statistics, Mathematical Data Science, and Application sciences.

Functional Analysis	Mathematical Statistics
Functional Analysis for Data Science	Asymptotic Statistics
Functional Analysis	Mathematical Statistics
Nonlinear Functional Analysis	Spatial Statistics

Application Sciences	Mathematical Data Science
3D Deep Learning	Advanced Graph Theory with Applications
Advanced Methods in Data Mining and Machine Learning	Advanced Optimization with Applications
Algorithms for Sequence Analysis	Advanced Statistics
Big Data Analytics - Methods and Applications	Asymptotic Statistics
Cognitive Systems I	Bayesian Statistics
Computation in Cognitive and Neural Systems	Causal Inference
Computer Vision II - Multiple Image Analysis	Empirical processes
Computer Vision I	High-dimensional Statistics
Data Analytics in Life Insurance	High Performance Computing I
Data Mining	Mathematics of Games
Deep Learning for Graphics and Visualization	Monte Carlo Methods
Deploying and Operationalizing AI	Numerical Methods for Elliptic Partial Differential Equations
DeepVision - Deep Learning and Convolutional Neural Networks in Computational Vision	Numerical Optimization
Explainable Artificial Intelligence	Numerical Methods for Ordinary Differential Equations

Graph Analytics and Deep Learning	Point Processes
Introduction to Deep Learning	Random Fields
Knowledge-Based Artificial Intelligence	Stable Distributions
Learning Systems I: Introduction to Machine Learning	Statistical Learning
Learning Systems II	Stochastic Simulation
Machine Learning and Decision Making	Survival and Event History Analysis
Project Data Science on Very Large Data Sets	Time Series Analysis
Project Neural information processing	Topics in Longitudinal Data Science
Pattern Recognition	Topological Data Analysis
Statistical Learning Theory	Reinforcement Learning
Text Analytics and Deep Learning	Optimal Transport
Theory of Neural Networks	

Mathematics	Seminar
Advanced Topics in Partial Differential Equations	Advances in Artificial Intelligence - Master
Algebra	Analysis - Master
Discrete Time Financial Mathematics	Applied Graph Theory - Master
Stochastic Analysis	Empirical Studies with R (Master)
Probability Theory and Stochastic Processes	Financial Mathematics - Master
	Pattern Recognition - Master
	Numerics - Master
	Optimization - Master
	Research Trends in Visual Computing -

	Master
	Statistics - Master
	Machine Learning
	Stochastics - Master

Appendix 5: Elective Units at KGNU.

EU 1	EU 3-7
Data Mining Techniques in Cybersecurity Solutions	Stochastic Methods in Data Science
Theory of Programming	Introduction to cryptography
Software Engineering	Numerical methods for statistics
Software Project Management	Dynamical systems
	Formal Concepts Analysis
	Approximation of Data with Neural Networks
EU 2	Reinforcement Learning
Homology theory and topological data analysis	Machine Learning Peculiarities in Applied Areas
Data Analysis with Power BI and Python	Partial Differential Equations

The following table specifies the allocation of the above units in accordance with the selection at ULM in the areas of Application Sciences and Mathematical Data Science.

Application Sciences	Mathematical Data Science
Data Mining Techniques in Cybersecurity Solutions	Theory of Programming
Introduction to cryptography	Software Engineering
Stochastic Methods in Data Science	Software Project Management
Approximation of Data with Neural	Numerical methods for statistics

Networks	
Reinforcement Learning	Dynamical systems
Machine Learning Peculiarities in Applied Areas	Formal Concepts Analysis
	Partial Differential Equations