



**Agreement on  
Dual Degree Master Program in Computer Science**

between

**KAIST**

**Department of Computer Science**

and

**Technische Universität Berlin**

**Fakultät für Elektrotechnik und Informatik (Fakultät IV)**

# 1 Subject of the agreement and aims

This agreement describes the academic and administrative conditions concerning the realization of the dual degree program. The program supports the exchange of students between KAIST, Department of Computer Science, and TU Berlin, Fakultät für Elektrotechnik und Informatik (Fakultät IV). The aim is to enable students of Computer Science to receive degrees of both universities.

## 2 Academic conditions

### 2.1 This agreement applies to

KAIST and TUB students in the Master Program in Computer Science,

- who have successfully finished the Bachelor degree in Computer Science,
- and who are well-versed in the English language, as demonstrated by a TOEFL test (a minimum of 83 internet-based test points or 560 paper-based test points).

### 2.2 Admission procedure

Both parties guarantee that participants of the dual degree program will be selected according to their academic, personal, and linguistic qualifications. To enter the dual degree master program, students first have to be admitted to the Master Program in Computer Science at their *home institution*. Not later than in their first semester, students can apply for the dual degree master program. Applications are evaluated first by the home institution and then presented to the partner institution (which will become the student's *host institution*) for review and approval. To be admitted to the program, students must meet all graduate admission policies at both institutions, and must have advisors who agree to advise them at both institutions.

### 2.3 Exchange contingent

Up to five students are to be accepted by the host institution per year.

### 2.4 Acknowledgment of student's achievements on entering the dual degree program

On the assumption of fundamental equivalence and based on mutual trust in the academic quality of the host university's curriculum, it is agreed that

- KAIST acknowledges the qualification for entrance to TUB Master Program.
- TUB acknowledges the qualification for entrance to KAIST Master Program.

## 2.5 Student supervision and lab culture

Students will have an advisor at KAIST and an advisor at TUB. During their stay at the host institution, students form a part of their host advisor's laboratory, and participate in the lab's activities such as research seminars. The host advisor or his scientific staff will be available to mentor the student. See Appendix B on the selection of the advisor.

## 2.6 Curricular conditions

**Period of study.** The standard period of study is four semesters, consisting of three semesters of course work, and a master thesis that is usually written in the fourth semester. A standard period of two consecutive semesters is taken at the host institution. This can either be the second and third semester (master thesis written at the home institution), or the third and fourth semester (master thesis written at the host institution).

**Required credits.** Students are required to gather 18 credit points from KAIST and 60 ECTS from TUB. A maximum of 3 KAIST credits can be changed into ECTS, a maximum of 9 ECTS can be changed into credit points to ensure short study times, provided that both partner institutions agree to a student's request. The translation factor is 3.3 ECTS/credit point.

**Course overlap.** The lectures attended at both institutions must overlap only slightly.

**Major requirement.** Students must take at least 60 ECTS or 18 credit points in Computer Science. (The translation factor of 3.3 ECTS/credit point applies.)

**Minor requirement.** Students must take at least 18 ECTS in a minor subject. The minor subject must be distinct from Computer Science, with the minor courses forming an enrichment to the student's studies (in particular, minor courses would normally all be from the same subject area). Students have to receive approval for their choice of minor courses from TUB. (For courses taken at KAIST, the translation factor of 3.3 ECTS/credit point applies.)

**Specialization area.** Students must choose a specialization area from among the following four areas:

1. System Engineering (SE)
2. Dependable Systems (DS)
3. Intelligent Systems (IS)
4. Communication-Based Systems (CBS)

Students must take at least 30 ECTS in their specialization area. KAIST courses can be counted towards the specialization area as indicated in the table in Appendix C.

**Breadth requirement** Students must take at least one course from each of the following three areas. See Appendix D for the current list of courses that can be counted towards the breadth requirement.

1. Theory
2. Software
3. Computer Systems

**Mandatory general course.** Students must take one of the following KAIST courses: Probability and Statistics (CC511), Introduction to Materials and Engineering (CC512), Engineering Economy and Cost Analysis (CC513), Introduction to Instruments (CC522), and Entrepreneurship and Business Strategies (CC530).

**Seminar and project course.** Students must take at least one seminar and one project course at TUB (for instance, a combined seminar/project module).

**Master thesis.** The master thesis is usually written in the fourth semester of the program. It must be written in English on a topic in the student's specialization area. It must be accepted by both advisors, and is concluded by an oral presentation (defense).

A master thesis written at KAIST accounts for 9 credit points. A master thesis written at TUB accounts for 30 ECTS.

The master thesis is graded, with the grade appearing on the Master degree awarded by TUB. The grade will be determined by the TUB advisor in consultation with the KAIST advisor.

**Host country language.** Students are expected to acquire basic skills in the language of the host country.

## 2.7 Examination regulations

During the studies of KAIST students at TUB, the examination regulations (Prüfungsordnung) of TUB apply in the current version.

During the studies of TUB students at KAIST, the examination regulations of KAIST apply in the current version.

Both partner institutions will hand out a transcript of records in English to students. The Transcript of Records is an official inventory of the courses taken, the achieved number of KAIST credit points or ECTS, and national grades earned by the students throughout their stay in the host institution.

## 2.8 Awarding the degrees

After successful completion of the complete program at both universities, the students receive the Master Degree of both universities, that is, the M.Sc. of KAIST, and the M.Sc. of TUB.

### **3 Financial arrangements**

Students participating in this dual degree program will pay their normal tuition and registration fees at their home universities. During the term of the agreement, the host institution agrees to waive all tuition fees for incoming students under this agreement. However, student may have to pay a small student registration fee at the host institution.

The host university will arrange for accomodation in a student dormitory, if wanted and possible.

Participants of the dual degree program are responsible for their own travel and living expenses during the exchange, if there is no third party funding. The home as well as the host institution will, however, try to get financial support to defray all or part of those expenses.

## Appendix

This appendix lists information as it is currently valid. Both institutions will update course lists and other terms mentioned in this appendix in mutual consultation.

### A Suggested periods for stay at host institution

Most KAIST master students enter the master program at the beginning of the Korean academic year in February, although some are also admitted for the fall semester in September. TUB master students can enter the master program both in the winter semester (WS) or the summer semester (SS).

The TU winter semester currently ends in mid-February, overlapping with the KAIST spring semester starting in early February. It is therefore impossible for students to move from TUB to KAIST between the TUB winter semester and the KAIST spring semester. The following schedules are therefore currently possible:

spring SS	fall WS	spring SS	fall WS	spring SS
KAIST	KAIST	TUB	TUB	
KAIST	TUB	TUB	KAIST	
TUB	KAIST	KAIST	TUB	
	TUB	TUB	KAIST	KAIST
	KAIST	KAIST	TUB	TUB

KAIST students are expected to arrive in Berlin before the beginning of March for the summer semester, and before the beginning of September for the winter semester. TUB offers introductory German courses in March and September, some seminar and project courses will also require students to start preparing before the beginning of the semester.

### B Advisor selection

KAIST Master students currently select their KAIST advisor very early in the first semester of the Master program. After being accepted to the dual degree program, a TUB advisor in the same research area will be found in discussion with the KAIST advisor.

After being accepted to the dual degree program, TUB Master students need to contact a KAIST professor in their desired specialization area, who is willing to host the student in their lab and to become their KAIST advisor. In discussion with the KAIST advisor, the student would also find a TU advisor in the same specialization area, who will supervise the student's master thesis (if the student returns to TUB to write the thesis), or who would be the co-advisor for the thesis (if the student writes the thesis at KAIST). Of course a student can also approach a TU professor first.

## C KAIST courses to be counted towards specialization area

Number	Title	CP	ECTS	Area
CS500	Design and Analysis of Algorithms	3	10	SE
CS504	Computational Geometry	3	10	IS
CS510	Computer Architecture	3	10	SE
CS520	Theory of Programming Languages	3	10	SE
CS522	Theory of Formal Languages and Automata	3	10	SE
CS530	Operating System	3	10	SE
CS540	Network Architecture	3	10	CBS
CS542	Internet Systems Technology	3	10	CBS
CS550	Software Engineering	3	10	SE
CS560	Database System	3	10	IS
CS562	Database Design	3	10	IS
CS570	Artificial Intelligence	3	10	IS
CS574	Natural Language Processing I	3	10	IS
CS576	Computer Vision	3	10	IS
CS579	Computational Linguistics	3	10	IS
CS580	Interactive Computer Graphics	3	10	IS
CS600	Graph Theory	3	10	SE
CS610	Parallel Processing	3	10	SE
CS620	Theory of Compiler Construction	3	10	SE
CS642	Distributed Processing Systems	3	10	CBS
CS644	Advanced Network Architecture	3	10	CBS
CS650	Advanced Software Engineering	3	10	SE
CS655	System Modeling and Analysis	3	10	SE
CS660	Information Storage and Retrieval	3	10	IS
CS662	Distributed Database	3	10	CBS
CS664	Advanced Database System	3	10	IS
CS670	Fuzzy and Intelligent System	3	10	IS
CS674	Natural Language Processing II	3	10	IS
CS676	Pattern Recognition	3	10	IS
CS678	Intelligent Robotics	3	10	IS
CS682	Digital Storytelling	3	10	IS
CS684	Human-Computer Interaction	3	10	IS
CS700	Topics in Computation Theory	3	10	SE
CS710	Topics in Computational Architecture	3	10	SE
CS712	Topics in Parallel Processing	3	10	SE
CS720	Topics in Programming Languages	3	10	SE
CS730	Topics in Operating Systems	3	10	SE
CS744	Topics in System Architecture	3	10	SE
CS750	Topics in Software Engineering	3	10	SE
CS760	Topics in Database System	3	10	IS
CS770	Topics in Computer Vision	3	10	IS
CS772	Topics in Natural Language Processing	3	10	IS
CS774	Topics in Artificial Intelligence	3	10	IS
CS776	Topics in Cognitive Science	3	10	IS
CS780	Topics in Interactive Computer Graphics	3	10	IS

## D Courses to be counted towards breadth requirement

### D.1 Theory

KAIST: Design and Analysis of Algorithms (CS500), Theory of Formal Languages and Automata (CS522);

TUB: Algebraic Process Calculi (MINF-VS-AlgProCalc), Theory of Distributed Algorithms (MINF-VS-DistAlgo), Temporal Logic (MINF-VS-TempLogSoft).

### D.2 Software

KAIST: Theory of Programming Languages (CS520), Software Engineering (CS550), Database System (CS560) or Database Design (CS562), Artificial Intelligence (CS570);

TUB: Compiler Construction I (MINF-SE-Comp1), Introduction to Neural Information Processing (MINF-IS-NI1).

### D.3 Computer Systems

KAIST: Computer Architecture (CS510), Operating System (CS530), Network Architecture (CS540);

TUB: Operating Systems II (MINF-SE-Bsys/PJ), Network Protocols and Architectures (MINF-KT-NA/Glg).

## E TUB modules currently taught in English

Module ID	Title	CP	ECTS	Area
MINF-SE-Bsys	Operating Systems II	4	12	SE
MINF-SE-Bsys/PJ	Operating Systems Project	2	6	SE
MINF-SE-Comp1	Compiler Construction I	2	6	SE
MINF-VS-AlgProCalc	Algebraic Process Calculi	2	6	DS
MINF-VS-DistAlgo	Theory of Distributed Algorithms	2	6	DS
MINF-VS-TempLogSoft	Temporal Logic	2	6	DS
MINF-VS-VersecProt	Verification of Security Protocols	3	9	DS
MINF-IS-PM	Probabilistic and Bayesian Modelling in Machine Learning and Artificial Intelligence	2	6	IS
MINF-IS-HTKI	Hot Topics in Machine Learning and Artificial Intelligence	2	6	IS
MINF-IS-PhotoCV	Photogrammetric Computer Vision	3	9	IS
MINF-IS-DigBV	Digital Image Processing	2	6	IS
MINF-IS-AutoBA	Automatic Image Analysis	2	6	IS
MINF-IS-OptFE	Optical Remote Sensing	2	6	IS
MINF-IS-MW&RFE	Microwave and Radar Remote Sensing	2	6	IS
MINF-IS-CV/SE	Seminar Hot Topics in Computer Vision	1	3	IS
MINF-IS-CV/PJ	Project Hot Topics in Computer Vision	2	6	IS
MINF-IS-ImAna/SE	Seminar Hot Topics in Image Analysis	1	3	IS



MINF-IS-ImAna/PJ	Project Hot Topics in Image Analysis	2	6	IS
MINF-IS-NI1	Introduction to neural information processing	2	6	IS
MINF-IS-NI2	Advanced neural information processing	2	6	IS
MINF-IS-NN	Neural Information Processing Project	3	9	IS
MINF-IS-Winf	Business Informatics	2	6	IS
MINF-IS-EntArchi	Enterprise Architecture	2	6	IS
MINF-IS-KN&ST	Knowledge Networks & Semantic Technologies	2	6	IS
MINF-IS-MetCS	Methodes in Cognitive Science	4	12	IS
MINF-IS-TopCS	Topics in Cognitive Science	2	6	IS
MINF-KT-NA/Glg	Network Protocols and Architectures	2	6	CBS
MINF-KT-NA/PE	Protocol Design	2	6	CBS
MINF-KT-NA/PJ	Network Architectures - Project	4	12	CBS
MINF-KT-NA/RL	Network Architectures - RouterLab	2	6	CBS
MINF-KT-NA/VTK	Advanced Network Architectures	2	6	CBS

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