

General description of the degree program	
<b>Name</b>	<b>Computer Science</b>
<b>Qualification awarded:</b>	Bachelor of Science (B.Sc.) in Computer Science
<b>Level of qualification</b>	first-cycle
<b>Qualification requirements and regulations</b>	n/a
<b>Key learning outcomes</b>	<p>Graduates have:</p> <ul style="list-style-type: none"> <li>• technical knowledge in computer science aligned to industrial requirements</li> <li>• methodical and analytical competences qualified for self-contained problem solving</li> <li>• key qualifications like presentation of results, ability to work in a team, management competence, interdisciplinary work</li> </ul> <p>Graduates are familiar with the structure of small and large applications and their interaction, as well as with the different areas of expertise in the field of computer science. They are able to analyze the users' requirements, advise customers and develop tailor-made programs.</p>
<b>Profile of the program</b>	<p>After 7 semesters of study graduates have a degree qualifying for work. The profile is designed to meet the needs of both companies and research institutions, taking into account the quickly changing technologies and requirements. Also, some courses are carried out with close co-operation of companies. Students are not only taught about the different areas of expertise but also about basics of electrical engineering and business studies, as well as mathematical models and key skills like presentation techniques.</p> <p>The foundation courses teach different subjects from the areas of computer science and natural sciences, as well as practical key qualifications. Students are also encouraged to improve their foreign language proficiency out of a wide range of choices. The advanced courses deepen the computer science skills by lectures and the internship.</p> <p>In addition, students can choose electives according to their individual areas of interest in semesters 6 and 7, and thus specialize. As is the case with all Bachelor's programs at HsKA, the program has a strong labor market orientation. As a compulsory component of the program a one-semester work placement in the 4<sup>th</sup> semester allows students to apply in industry and research institutes what they have learned up to this stage.</p>
<b>Occupational profiles of graduates</b>	<p>Computer science graduates have a broad field of activity. They develop programs for a wide range of applications, which cover small controls, mobile appliances or applications for globally linked platforms. The development does not only include programming but also analyzing the customer's requirements, designing a solution and evaluating existing systems. Graduates also work as consultants or set up and supervise large databases, computer networks and servers.</p>
<b>Program duration:</b>	210 ECTS / 7 semesters including one traineeship semester and bachelor's thesis
<b>Pre-study work experience:</b>	Not required
<b>Specific admission requirements</b>	General or subject specific university entrance qualification or comparable entrance qualification; motivation letter. For students from

	<p>abroad: proof of satisfactory knowledge of German.</p> <p>Ranking is created using weighted grades for the university entrance qualification (factor 6) and individual subjects of mathematics (factor 2), German or corresponding language for a foreign entrance qualification (factor 1), English (factor 1).</p> <p>Additional selection criteria take the form of how well-motivated the students are for the study program, study-related school and vocational training, foreign language skills and periods spent abroad. Up to 10 bonus points can be given.</p>
<b>Specific arrangements for recognition of prior learning</b>	<p>Vocational training at “Meister” level or acquired at a school for further vocational training, together with an interview at HsKA, will be recognized as equivalent to university entrance qualification.</p> <p>2-year vocational training followed by 3-year occupation in a related job, together with an interview at HsKA and an eligibility exam at Konstanz University of Applied Sciences, will be recognized as equivalent to university entrance qualification.</p> <p>Results achieved in theory or practical courses of an academic degree program at a recognized higher education institution can be transferred to HsKA according to ECTS recognition procedures upon express request, if the Board of Examiners acknowledges these results to be comparable in terms of level, subject content and extent.</p> <p>Prior learning must be in a similar or related subject.</p>
<b>Traineeship semester:</b>	4 <sup>th</sup> semester is internship semester
<b>Start of program:</b>	In summer semester and in winter semester
<b>Application deadline:</b>	15 January for application into summer semester 15 July for application into winter semester
<b>Language of instruction:</b>	German. Some lectures may be held in English
<b>Mode of study</b>	Full-time
<b>The applicant should:</b>	Have a good ability to abstract, a good skill for systematic problem solving, and be disposed for interdisciplinary work in a team
<b>Access to further studies:</b>	Master
<b>Examination regulations, assessment and grading</b>	For information about the courses as well as the study and examination credits required for successful completion of studies, see annex (pages 4-8). The annex also shows the weight of the various examinations towards the final grade. All parts which count towards a subject examination must be concluded successfully with a mark no less than 4.0 each.
<b>Final examination:</b>	Bachelor’s thesis and colloquium
<b>Graduation requirements</b>	The student must have attained the pre-examination credits as laid down in the table below.
<b>Program director:</b>	Prof. Dr.-Ing. Holger Vogelsang
<b>ECTS Departmental Coordinator:</b>	Prof. Dr. Martin Sulzmann

**Course structure diagram with credits:**

Foundation courses					
<b>1st semester</b>	Computer Science 1 8 cp	Computer Engineering 1 7 cp	Theoretical Computer Science 1 4 cp	Mathematics 1 8 cp	Language Competence 4 cp
<b>2nd semester</b>	Computer Science 2 7 cp	Computer Engineering 2 7 cp	Distributed Systems 1 & Theoretical Computer Science 2 5 cp	Mathematics 2 7 cp	Software Laboratory 5 cp
Advanced courses					
<b>3rd semester</b>	System Software & System Programming 9 cp	Databases and Communication Networks 1 7 cp	Man-Machine-Communication 4 cp	Automation and Declarative Programming 6 cp	Business Administration 4 cp
<b>4th semester</b>	Internship Preparation and Follow-up 6 cp		Internship 24 cp		
<b>5th semester</b>	Software Engineering and Distributed Systems 2 8 cp	Computer Architecture and Autonomous Systems 4 cp	Databases and Communication Networks 2 5 cp	Student Research Project 6 cp	ERP Systems 7 cp
<b>6th semester</b>	Embedded Software 5 cp	Computer Graphics with Laboratory 4 cp	Communication Competence 7 cp	Key Qualification 6 cp	Selected Chapters Computer Science 1 8 cp
<b>7th semester</b>	Scientific Working 5 cp	Thesis 12 cp		Final Examination 3 cp	Selected Chapters Computer Science 2 8 cp

## Annex Tables for the degree program

Explanation of the content of the columns and the abbreviations in the tables below:

Column number

- |   |  |
|---|--|
| 1 | Course code (EDV-Bez)  |
| 2 | Course title (course)  |
| 3 | Semester in which the course is offered (Sem)  |
| 4 | credit points (ECTS), contact hours per week (CHW)   |
| 5 | Course type (type)<br>V = Lecture            S = Seminar<br>Ue = Exercise        P = Project lecture<br>L = Lab                T = Lecture (team teaching) |
| 6 | Prerequisites (Voraus.) for admission to the exam procedure  |
| 7 | Type of study credits/pre-examination credits specifying duration in minutes, if no other unit is specified. (SL/PV / Dur)                                 |
| 8 | Type of examination credits specifying duration in minutes, if no other unit is specified (PL/ Dur)  |

For 7 and 8 The following can be designated as study or pre-examination credits (SL/PV) or examination credits (PL):

MP = Oral exam	Re = Presentation
KI = Written exam	La = Lab work
St = Study assignment	En = Draft
Ue = Practical exercises	PA = Practical assignment
Ha = Term paper	BT = Bachelor's thesis
MK = Oral exam or written exam	

The following applies for the duration

S: Semester            M: Month(s)            W: Week(s)            T: Days(s)

- |    |   |
|----|---|
| 9  | Weight within the module for subject grade (GFN)          |
| 10 | Assigning examination credits to subject examination (FP) |
| 11 | Note  |

For 6 to 11 The following abbreviations are used:

Block	Block course
FP:	Subject examination
üPL	Cross-course examination credits
bPL	Study-related examination credits
PS	Practical study semester
LV	Course

Degree program: Computer Science				Degree awarded: Bachelor of Science								Table 1	
Foundation courses													
1	2	3	4a	4b	5	6	7a	7b	8a	8b	9	10	11
EDV-Bez.	Course	Sem.	CP	CHW	Type	Voraus.	SL/PV	Dur	PL	Dur	GFN	FP	Note
INFB 110	Computer Science 1	1	8	6	V+Ue		Ue	1 S	KI	120	1	1	
INFB 120	Computer Engineering 1	1	7	6	V+Ue		Ue	1 S	KI	120	1	2	
INFB 130	Theoretical Computer Science 1	1	4	4	V				KI	90	1	3	
INFB 140	Mathematics 1	1	8	6	V+Ue		Ue	1 S	KI	90	1	4	
INFB 150	Language Competence	1	4	4	V				KI	90	1	5	
INFB 210	Computer Science 2	2	7	6	V+Ue		Ue	1 S	KI	120	1	6	
INFB 220	Software Laboratory	2	5	4	L		La	1 S				6	
NFIB 230	Distributed Systems 1 and Theoretical Computer Science 2	2	5	4	(V+V)				KI	120	1	7	
INFB 240	Mathematics 2	2	7	6	V				KI	120	1	8	
INFB 250	Computer Engineering 2	2	7	6	V+Ue		Ue	1 S	KI	90	1	9	
<b>Total:</b>													
			62	52			6		9				

Degree program: Computer Science				Degree awarded: Bachelor of Science				Table 2	
Foundation courses									
EDV-Bez.	Title	Subject Examination	Related courses	Weight for overall grade	Note				
INFBF01	Computer Science 1	FP 1	Computer Science 1	1					
INFBF02	Computer Engineering 1	FP 2	Computer Engineering 1	1					
INFBF03	Theoretical Computer Science 1	FP 3	Theoretical Computer Science 1	1					
INFBF04	Mathematics 1	FP 4	Mathematics 1	1					
INFBF05	Language Competence	FP 5	Language Competence	1					
INFBF06	Computer Science 2 and Software Laboratory	FP 6	Computer Science 2, Software Laboratory	1					
INFBF07	Distributed Systems 1 and Theoretical Computer Science 2	FP 7	Distributed Systems 1 and Theoretical Computer Science 2	1					
INFBF08	Mathematics 2	FP 8	Mathematics 2	1					
INFBF09	Computer Engineering 2	FP 9	Computer Engineering 2	1					

Degree program: Computer Science				Degree awarded: Bachelor of Science									Table 3
Advanced courses													
1	2	3	4a	4b	5	6	7a	7b	8a	8b	9	10	11
EDV-Bez.	Course	Sem.	CP	CHW	Type	Voraus.	SL/PV	Dur	PL	Dur	GFN	FP	Note
INFB 310	System Software and System Programming	3	9	8	V+Ue		Ue	1 S	KI	120	1	10	
INFB 330	Databases and Communication Networks 1	3	7	6	V+Ue		Ue	1 S	KI	120	1	11	
INFB 340	Man-Machine-Communication	3	4	3	V+Ha		Ha	1 S	MK	20/90	1	12	
INFB 350	Automation and Declarative Programming	3	6	5	V+Ue		Ue	1 S	KI	120	1	13	
INFB 360	Business Administration	3	4	4	V				KI	90	1	14	
INFB 4P0	Internship Preparation and Follow-up	4	6	4	V+Ue		Ue+Ue	1 W+ 1 W					
INFB 4PX	Internship	4	24		Ue	Bachelor preliminary exam	PA	95 T					
INFB 510	Software Engineering and Distributed Systems 2	5	8	7	V+Ue		Ue	1 S	KI	90	1	15	
INFB 520	Databases and Communication Networks 2	5	5	4	V				KI	120	1	16	
INFB 530	Computer Architecture and Autonomous Systems	5	4	4	V				KI	120	1	17	
INFB 540	Student Research Project	5	6	4	V+Ha		Ha	1 S	MP	20	1	18	
INFB 550	ERP Systems	5	7	6	V+Ue		Ue	1 S	KI	90	1	19	
INFB 610	Embedded Software	6	5	4	V+Ue	§43 (5)	Ue	1 S	KI	90	1	20	
INFB 620	Computer Graphics with Laboratory	6	4	3	V+Ue	§43 (5)	Ue	1 S	KI	90	1	21	
INFB 630	Communication Competence	6	7	6	V+Ha	§43 (5)	Ha	1 S	Re	20	1	22	
INFB 640	Key Qualification	6	6	6	Ue + Ue + V	§43 (5)	Ue	1 S	MP + KI	20+90	1+1	23	≤ 4
INFB 650	Selected Chapters Computer Science 1	6	8	8	V		§43 (3)				2	24	

1	2	3	4a	4b	5	6	7a	7b	8a	8b	9	10	11
EDV-Bez.	Course	Sem.	CP	CHW	Type	Voraus.	SL/PV	Dur	PL	Dur	GFN	FP	Note
INFB 710	Selected Chapters Computer Science 2	7	8	8	V		§43 (4)				1	25	
INFB 720	Scientific Working	7	5	3	Ue				Ue	1 M	1	26	
INFB 730	Thesis	7	12			§43 (5); minimum 120 CP advanced courses and passed internship			BT	4 M	1	26	
INFB 740	Final Examination	7	3			§43 (5); minimum 120 CP advanced courses and passed internship			MP	20	1	27	
Total:			148	93			16		18				

Degree program: Computer Science			Degree awarded: Bachelor of Science		Table 4
Advanced courses					
EDV-Bez.	Title	Code	Related courses	Weight for overall grade	Note
INFBF20	System Software and System Programming	FP 10	System Software and System Programming	1	
INFBF21	Databases and Communication Networks 1	FP 11	Databases and Communication Networks 1	1	
INFBF22	Man-Machine-Communication	FP 12	Man-Machine-Communication	1	
INFBF23	Automation and Declarative Programming	FP 13	Automation and Declarative Programming	1	
INFBF24	Business Administration	FP 14	Business Administration	1	
INFBF25	Software Engineering and Distributed Information Systems 2	FP 15	Software Engineering and Distributed Information Systems 2	1	
INFBF26	Databases and Communication Networks 2	FP 16	Databases and Communication Networks 2	1	
INFBF27	Computer Architecture and Autonomous Systems	FP 17	Computer Architecture and Autonomous Systems	1	
INFBF28	Student Research Project	FP 18	Student Research Project	1	
INFBF29	ERP Systems	FP 19	ERP Systems	1	
INFBF30	Embedded Software	FP 20	Embedded Software	1	
INFBF31	Computer Graphics	FP 21	Computer Graphics	1	
INFBF32	Communication Competence	FP 22	Communication Competence	1	
INFBF33	Key Qualification	FP 23	Key Qualification	1	
INFBF34	Selected Chapters Computer Science 1	FP 24	Selected Chapters Computer Science 1	2	
INFBF35	Selected Chapters Computer Science 2	FP 25	Selected Chapters Computer Science 2	1	
INFBF36	Thesis	FP 26	Thesis and Scientific Working	4	
INFBF37	Final Examination	FP 27	Final Examination	1	