

Curriculum

ECTS Subject code T IE SN

- **T** - type of course: **B** for BEng, **M** for MEng
- **CSTg** – “Computer Systems and Technologies” in German
- **FBEE** – F fundamental, B - bachelor program, EE – electrical engineering group of specialities
- **SN** - subsequent number of the subject

Lectures (L), tutorials (Tut.), labs (Lab.) weekly;

exam (E), continuous assessment (CA); semester projects (SP)/ semester assignment (course work) (SA)

No	SUBJECT	Week Load					Assessment				ECTS subject code	ECTS credits
		L	Tut.	Lab.	Self study	Total	E	CA	SP	SA		

SEMESTER I

1	Mathematics – Preliminary.	4	2	0	10	16	1				BCSTg01	8
2	Electrical Engineering	2	2	1	9	14	1				BCSTg02	7
3	Programming And Computer Use	2	0	3	9	14	1				BCSTg03	7
4	Fundamentals Of Informatics	3	1	2	10	16	1			1	BCSTg04	8
5	German Language	0	(8)	0	(2)	(10)		1			BCSTg05	-
6	Sports	0	(3)	0	0	(3)					BCSTg06	-
Total		11	5	6	38	60	4	1	0	1		30

SEMESTER II

7	Mathematics 1– Linear Algebra	3	3	0	10	16	1				BCSTg07	8
8	Programming Paradigms	3	0	2	5	10	1				BCSTg08	5
9	Computer Systems (Technical Informatics I)	2	0	2	6	10	1				BCSTg09	5
10	Logic	2	0	2	4	8		1		1	BCSTg10	4
11	Modeling	2	0	1	5	8	1				BCSTg11	4
12	Key Competences And Methods 1	2	0	0	6	8		1			BCSTg12	4
13	German Language	0	(8)	0	(2)	(10)		1			BCSTg13	-
14	Sports	0	(3)	0	0	(3)					BCSTg14	-
Total		14	3	7	36	60	4	3	0	1		30

SEMESTER III

15	Mathematics 2– Analysis	4	2	0	10	16	1				BCSTg15	8
16	Algorithms And Data Structures	3	0	2	7	12	1				BCSTg16	6
17	Basics Of Theoretical Informatics	3	0	2	5	10	1				BCSTg17	5
18	Computer Architectures	2	1	2	7	12	1				BCSTg18	5
19	Key Competences And Methods 2	2	0	0	4	6		1			BSCTg19	4
20	About Germany 1	1	1	0	2	4		1		1	BCSTg20	2
21	English Language	0	(3)	0	(3)	(6)					BCSTg21	-
22	Sports	0	(3)	0	0	(3)					BCSTg22	-
Total		15	4	6	35	60	4	2	0	1		30

No	SUBJECT	Week Load					Assessment				ECTS subject code	ECTS credits
		L	Tut.	Lab.	Self study	Total	E	CA	SP	SA		

SEMESTER IV

23	Mathematics 3	3	2	0	7	12	1				BCSTg23	6
24	Theoretical Informatics 2	2	0	2	6	10	1				BCSTg24	5
25	Analysis And Synthesis Of Digital Circuits	2	1	2	7	12	1				BCSTg25	5
26	Practical Module – Key Competences	0	2	0	6	8		1		1	BCSTg26	3
27	IT Project Management	2	0	0	6	8		1			BCSTg27	3
28	Databases	2	0	2	6	10	1				BCSTg28	5
29	English Language	0	(3)	0	(5)	(8)		1			BCSTg29	3
30	Sports	0	(3)	0	0	(3)					BCSTg30	-
Total		11	5	6	38	60	4	3	0	1		30

SEMESTER V

31	Software Engineering	2	0	2	6	10	1			1	BCSTg31	5
32	Operating systems	2	0	2	6	10	1				BCSTg32	5
33	Optional Subject In Module – (List 10)	2	2	0	6	10		1		1	BCSTg33	5
34	Optional Subject In Module – (List 1)	2	0	2	6	10	1				BCSTg34	5
35	Optional Subject In Module – (List 2)	2	0	2	6	10	1				BCSTg35	5
36	Optional Subject – (List 7)*	2	0	2	6	10		1			BCSTg36	5
Total		12	2	10	36	60	4	2	0	2		30

SEMESTER VI

37	Communications And Networks (Technical Informatics II)	2	0	2	6	10	1				BCSTg37	5
38	IT Project	0	0	0	12	12			1		BCSTg38	6
39	Intelligent Systems	2	0	2	6	10	1				BCSTg39	5
40	Optional Subject – (List 8)*	2	0	2	6	10		1			BCSTg40	5
41	Optional Subject In Module – (List 3)	2	0	2	6	10	1				BCSTg41	5
42	About Germany 2	(1)	(1)	0	(2)	(4)		1			BCSTg42	1
43	Scientific Seminar	0	3	0	5	8		1		1	BCSTg43	3
Total		8	3	8	41	60	3	3	1	1		30

No	SUBJECT	Week Load					Assessment				ECTS subject code	ECTS credits
		L	Tut.	Lab.	Self study	Total	E	CA	SP	SA		

SEMESTER VII

44	Secure Systems	2	2	0	6	10	1				BCSTg44	5
45	Optional Subject – (List 9)*	2	0	2	6	10		1		1	BCSTg45	5
46	Optional Subject In Module – (List 4)	2	0	2	6	10	1				BCSTg46	5
47	Optional Subject In Module – (List 5)	2	0	2	6	10	1				BCSTg47	5
48	Optional Subject In Module – (List 6)	2	0	2	6	10	1				BCSTg48	5
49	Proseminar	2	1	1	6	10		1		1	BCSTg49	5
Total		12	3	9	36	60	4	2	0	2		30

SEMESTER VIII

50	Integrated Practice with Bachelor Work (30 ECTS credits)										BCSTg50	30
Total												30

*The Students choose from lists 7, 8 и 9 modules with equal sequence numbers, so a field with 3 modules is build

- Field 1: Physics
- Field 2: Logistics
- Field 3: Medical Systems
- Field 4: Communication Systems
- Field 5: Mathematics
- Field 6: Industrial technologies for Informatics
- Field 7: Virtual Industrial Technologies

Lists of optional modules

List 1		ECTS credits - 5
1	Petri Nets	BCSTg34.1
2	Visualization	BCSTg34.2
3	Bioinformatics	BCSTg34.3
4	Process Modeling	BCSTg34.4
5	Enhanced Programming Concepts For Exact Data Handling	BCSTg34.5
6	Techniques For Implementation Of Software Product Lines	BCSTg34.6
7	Introduction in Computer Games	BCSTg34.7
8	Computational Intelligence in Games	BCSTg34.8
9	XML-Technologies	BCSTg34.9
List 2		ECTS credits - 5
1	Evolutionary algorithms	BCSTg35.1
2	Interactive systems	BCSTg35.2
3	Computer Graphics I	BCSTg35.3
4	Introduction To Industrial Informatics	BCSTg35.4
5	Knowledge Management - Methods And Tools	BCSTg35.5
6	Document Processing	BCSTg35.6
7	Fundamentals Of Image Processing	BCSTg35.7
List 3		ECTS Credits - 5
1	Programming 2	BCSTg41.1
2	Applied Systems	BCSTg41.2
3	Interaction Human - Computer	BCSTg41.3
4	Fundamentals Of Programming In C ++	BCSTg41.4
5	Functional Programming	BCSTg41.5
6	Business Models For E-Commerce	BCSTg41.6
7	Introduction to Startup Engineering	BCSTg41.7
8	Introduction to Simulation	BCSTg41.8
List 4		ECTS credits - 5
1	Compilers	BCSTg46.1
2	Photorealistic image processing	BCSTg46.2
3	Neuro – Fuzzy Systems	BCSTg46.3
4	IT – Operations management	BCSTg46.4
5	Simulation and 3D - Animation	BCSTg46.5
6	Data mining	BCSTg46.6
7	CRM – recommender Systems	BCSTg46.7
8	Design of Multimedia Systems	BCSTg46.8
List 5		ECTS credits – 5
1	Embedded Image Processing	BCSTg47.1
2	Computer-Controlled Systems Engineering	BCSTg47.2
3	Information Technologies In Organizations	BCSTg47.3
4	Machine Learning	BCSTg47.4
5	Development Of Computer Games	BCSTg47.5
6	Simulations In Industry And Logistics	BCSTg47.6
7	GPU-Programming	BCSTg47.7
List 6		ECTS credits - 5
1	Management - Information Systems	BCSTg48.1
2	Web Engineering	BCSTg48.2
3	Visualization Of Information	BCSTg48.3
4	Principles And Components Of Embedded Systems	BCSTg48.4
5	Information Retrieval	BCSTg48.5
6	Game Engine Architectures	BCSTg48.6
7	Databases II	BCSTg48.7
8	Logic II - Theory and implementation	BCSTg48.8
List 7		ECTS credits - 5
1	Physics 1	BCSTg36.1
2	Logistics - Foundations	BCSTg36.2
3	Computer Vision	BCSTg36.3
4	Design Of Analog Circuits	BCSTg36.4
5	Theory Of Approximation	BCSTg36.5
6	Material Science For Informatics	BCSTg36.6
7	Product Development	BCSTg36.7
List 8		ECTS credits - 5
1	Physics 2	BCSTg40.1
2	Logistic - Processes	BCSTg40.2
3	Medical Image Processing	BCSTg40.3
4	Communication Systems	BCSTg40.4
5	Applied Mathematics	BCSTg40.5
6	Design And Programming Process	BCSTg40.6
7	Virtual Engineering	BCSTg40.7

List 9		ECTS credits – 5	
1	Physics Of Semiconductors		BCSTg45.1
2	Science For Material Flow		BCSTg45.2
3	Computer Diagnostics And Therapy		BCSTg45.3
4	Telematics		BCSTg45.4
5	Financial Mathematics		BCSTg45.5
6	Methods For Final Processing		BCSTg45.6
7	Product Lifecycle Management		BCSTg45.7
List 10		ECTS credits – 5	
1	Discrete Structures		BCSTg33.1
2	Numerical Methods		BCSTg33.2
3	Statistics and Stochastics		BCSTg33.3

List of optional subjects for the students in the 7-th semester

No	SUBJECT	Week Load					Assessment				ECTS subject code	ECTS credits
		L	Tut.	Lab.	Self study	Total	E	CA	SP	SA		
51	Introduction to mathematical optimization	2	0	2	10	14	1				BCSTg51	9
52	Studies under microgravity conditions	2	0	2	6	10	1				BCSTg52	4
53	Combinatorial optimization / Integer linear optimization	2	0	2	10	14	1				BCSTg53	15
54	Data Center IT Fundamentals	2	0	2	6	10			1		BCSTg54	15
55	IDEA Engineering	2	0	2	10	14	1				BCSTg55	5
56	Liquid Democracy	2	0	2	10	14	1				BCSTg56	5
57	Esthetic and Usability	2	0	2	10	14	1				BCSTg57	5