3.1.B. Special Compulsory Courses for the General Track (12 credit hours):

Course ID	Course Name	Credit Hours	ECTS	Contact Hours		Type	Prerequisites / Corequisites
				Lect.	Prac.		
CS330	Image Understanding	3		2	2	F2F	CS223, EE317
CS332	Computer Graphics	3		2	2	F2F	CS223, EE317
CS419	Compiler Construction	3		3	-	F2F	CS222, CS223
CS477	Mobile Computing	3		2	2	BLD	CS117, CS263
	Total	**12**		**9**	**6**		

3.1.C. Special Compulsory Courses for the Data Science Track (12 credit hours):

Course ID	Course Name	Credit Hours	ECTS	Contact Hours		Type	Prerequisites / Corequisites
				Lect.	Prac.		
CS330	Image Understanding	3		2	2	F2F	CS223, EE317
CE377	Machine Learning	3		3	-	F2F	CS263, IE0121
CS460	Data Mining	3		3	-	BLD	CS263
EE570	Cloud Computing and Big Data	3		3	-	F2F	CE352^{co}
	Total	**12**		**11**	**2**		

3.1.D. Special Compulsory Courses for the Cybersecurity Track (12 credit hours):

Course ID	Course Name	Credit Hours	ECTS	Contact Hours		Type	Prerequisites / Corequisites
				Lect.	Prac.		
CE354	Computer Security	3		3	-	BLD	CE352
CS470	Cryptography	3		3	-	F2F	CS222
CS4713	Ethical Hacking	3		3	-	BLD	CE352
CS4714	Digital Forensics	3		3	-	F2F	CE352
	Total	**12**		**12**	**0**		

3.2. Program Requirements (Electives [b]): (12 credit hours)

Students are required to take 12 credits as elective courses. In addition to the courses listed in the following table:

- Students may select 12 credits of 300 level and above from required/elective courses of Cybersecurity or Data Science tracks that are not listed in the table below to fulfill the elective requirements.
- Students may also select a maximum of six credits of 300 level and above courses from other departments in the School of Electrical Engineering and Information Technology to fulfill the elective requirements.

3.2.A. List of Elective Courses for the General Track:

Course ID	Course Name	Credit Hours	ECTS	Contact Hours		Type	Prerequisites / Corequisites
				Lect.	Prac.		
CS333	Game Programming	3		2	2	BLD	BSC001
CS357	Cybersecurity	3		3	-	BLD	BSC001
CS358	Multimedia Systems Design	3		3	-	BLD	BSC001
CS359	Internet of Things	3		3	-	BLD	BSC001
CS364	Information Retrieval	3		3	-	BLD	BSC001
CS365	Systems Analysis and Design	3		3	-	BLD	BSC001
CS371	Bioinformatics	3		3	-	BLD	BSC001
CS430	Virtual and Augmented Reality	3		2	2	BLD	BSC001
CS432	Scientific Visualization	3		3	-	BLD	BSC001
CS439	Computer Animation	3		3	-	BLD	BSC001
CS450	Operations Optimization	3		3	-	BLD	BSC001
CS457	Decision Support Systems and Intelligent Systems	3		2	2	BLD	BSC001
CS458	Wireless Networks	3		3	-	BLD	BSC001
CS460	Data Mining	3		3	-	BLD	BSC001
CS462	Database Design	3		3	-	BLD	BSC001
CS481	Special Topics in Computer Graphics	3		3	-	BLD	BSC001
CS482	Special Topics in Software Engineering	3		3	-	BLD	BSC001
CS484	Special Topics in Database Technologies and Applications	3		3	-	BLD	BSC001
CS489	Special Topics in Algorithms	3		3	-	BLD	BSC001
CS4512	Natural Language Processing	3		3	-	BLD	BSC001
CS4811	Special Topics in Data Science Technologies and Applications	3		3	-	BLD	BSC001
CS4831	Special Topics in Applied Computer Science	1		1	-	BLD	BSC001
CS4832	Special Topics in Applied Computer Science	2		2	-	BLD	BSC001
CS4833	Special Topics in Applied Computer Science	3		3	-	BLD	BSC001

[b] All elective courses are to be taken at a partner university at Germany

F2F: Face-to-face BLD: Blended OL: Online co: Corequisite

3.2.B. List of Elective Courses for the Data Science Track

Students are required to take 12 credits as elective courses. In addition to the courses listed in the following table:

- Students may select 12 credits of 300 level and above from required/elective courses of General or Cybersecurity tracks that are not listed in the table below to fulfill the elective requirements.
- Students may also select a maximum of six credits of 300 level and above courses from other departments in the School of Electrical Engineering and Information Technology to fulfill the elective requirements.

Course ID	Course Name	Credit Hours	ECTS	Contact Hours		Type	Prerequisites / Corequisites
				Lect.	Prac.		
CS358	Multimedia Systems Design	3		3	-	BLD	BSC001
CS359	Internet of Things	3		3	-	BLD	BSC001
CS364	Information Retrieval	3		3	-	BLD	BSC001
CS371	Bioinformatics	3		3	-	BLD	BSC001
CS432	Scientific Visualization	3		3	-	BLD	BSC001
CS450	Operations Optimization	3		3	-	BLD	BSC001
CS456	Cloud Computing	3		3	-	BLD	BSC001
CS457	Decision Support Systems and Intelligent Systems	3		2	2	BLD	BSC001
CS462	Database Design	3		3	-	BLD	BSC001
CS484	Special Topics in Database Technologies and Applications	3		3	-	BLD	BSC001
CS4512	Natural Language Processing	3		3	-	BLD	BSC001
CS4811	Special Topics in Data Science Technologies and Applications	3		3	-	BLD	BSC001
CS4813	Special Topics in Artificial Intelligence	3		3	-	BLD	BSC001
CS4831	Special Topics in Applied Computer Science	1		1	-	BLD	BSC001
CS4832	Special Topics in Applied Computer Science	2		2	-	BLD	BSC001
CS4833	Special Topics in Applied Computer Science	3		3	-	BLD	BSC001