

PLAN OF STUDIES

FACULTY : **Information and Communication Technology**
MAIN FIELD OF STUDY : **Algorithmic Computer Science**
SPECIALIZATION : **Cryptography and Computer Security**
EDUCATION LEVEL : second-level studies
FORM OF STUDIES : full-time studies
PROFILE : general academic
LANGUAGE OF STUDY : English
IN EFFECT SINCE : 2022/2023

1 Set of obligatory and optional courses and groups of courses in semester arrangement

- Form of group of courses: Traditional - T, Remote - Z (wclps - means lecture, exercise, laboratory, project and seminar respectively), in brackets the ECTS points assigned to the remote forms.
- Way of crediting (Z): Exam - E, crediting - Z;
- Courses/group of courses: University wide - O; Concerning scientific activity - DN; Practical - P; Type (R) : KO - general education, PD - basic science, K - main field of study, S - specialization;

Semester 1

Obligatory courses/group of courses (18 ECTS points)

No.	Code	Name of group of courses	Weekly no of hours					LES	No. of hours		ECTS			F	Z	Course/group			
			lec	cl	lab	pr	s		ZZU	CNPS	DN	BU	uw			c	p	t	
1	W04INA-SM4009G	High Level Security - Vulnerabilities and Attacks	2	1	1	0	0	W01 W02 W03 W04 W05 W06 W07 W08 W10 U01 U02 U03 U04 U05 U06 U11 U12 U13 K02 K03 K05 K06 K07 K08 K09 K10 K12	60	120	4	4	4	Twcl/Zwl(3)	E	-	DN	P(2)	S
2	W04INA-SM4001G	Compliance and Operational Security	2	2	0	0	0		60	120	4	4	4	Twc/Zw(2)	E	-	DN	P(2)	S
3	W04INA-SM4010G	Algorithmic Number Theory	1	1	0	0	0	W01 W02 W03 W04 U01 U02 U03 U05 K03 K10	30	60	2	2	2	Twc/Zw(1)	Z	-	DN	P(1)	S
4	W04INA-SM4008G	Cryptography	2	2	1	0	0	W01 W02 W03 W04 W05 W07 W08 U01 U02 U03 U04 U05 U06 U09 U10 U11 U12 K01 K02 K03 K05 K07 K08 K09 K10	75	150	5	5	5	Twcl/Zwl(3)	E	-	DN	P(3)	K

5	W04INA-SM4117G	Legal Issues in Computer Security (Social Lecture)	2	0	0	0	0	0	W01 W03 W04 W05 W06 W07 W08 W09 W10 U03 U04 U05 U06 U07 U08 U09 U10 U11 U12 U13 K03 K04 K05 K06 K07 K08 K09 K10 K11 K12	30	90	3	0	2	T/Z	Z	O	-	-	KO
Total			9	6	2	0	0		255	540	18	15	17							

Optional courses/group of courses (2 group courses, 12 ECTS points)

No.	Code	Name of group of courses	Weekly no of hours					LES	No. of hours		ECTS		F	Z	Course/group				
			lec	cl	lab	pr	s		ZZU	CNPS	DN	BU			uw	c	p	t	
1	W04INA-SM4101G	Distributed Algorithms	2	1	1	0	0	W01 W02 W03 W04 U01 U02 U03 U04 U05 K01 K03 K04 K07	60	180	6	6	4	Twcl/Zw(2)	Z	-	DN	P(4)	S
2	W04INA-SM4102G	Data Mining	2	1	1	0	0	W01 W02 W04 W07 U01 U03 U05 U06 U12 U13 K02 K03 K04 K07 K08 K10	60	180	6	6	4	Twcl/Zw(2)	Z	-	DN	P(4)	S
3	W04INA-SM4103G	Applied Stochastic with Applications for Security and Privacy	2	2	0	0	0	W01 W02 W03 W04 W05 U01 U02 U03 U04 U05 U06 U08 U10 U12 K02 K03 K05 K06 K07 K10 K12	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
4	W04INA-SM4105G	Digital Signal Processing	2	2	0	0	0	W01 W02 W03 W04 W05 U01 U02 U03 U04 U06 U08 K02 K03 K07 K10	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
5	W04INA-SM4107G	Introduction to Electronics for Security Engineers	2	2	0	0	0	W01 W02 W03 W04 W05 W06 W07 W08 W09 W10 U01 U02 U03 U04 U05 U06 U08 U10 U11 U12 K02 K03 K04 K06 K07 K08 K09 K10	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S

6	W04INA-SM4109G	Identification and Biometric Systems	2	2	0	0	0	W01 W02 W04 W05 W06 W07 W08 W09 U01 U02 U03 U04 U05 U06 U07 U08 U09 U10 U11 U12 U13 K03 K05 K06 K07 K08 K09 K11 K12	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
7	W04INA-SM4110G	Monographic Lecture	2	2	0	0	0	W04 W05 U01 U05 U06 U07 U11 U12 K03	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
8	W04INA-SM4112G	Secure Cloud Computing	2	0	2	0	0	W02 W03 W04 W05 W07 U03 U05 U06 K01 K03 K05 K09	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
9	W04INA-SM4113G	Elliptic Curves for Developers	2	0	2	0	0	W02 W03 W04 U03 U06 K02 K03	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
10	W04INA-SM4114G	Monographic Lecture on Computer Security	2	1	1	0	0	W04 W05 U01 U025 U06 U11 U12 K03	60	180	6	6	4	Twcl/Zw(2)	Z	-	DN	P(4)	S
11	W04INA-SM4118G	Blockchain and Cryptocurrencies	2	0	2	0	0	W01 W02 W03 W04 W05 W07 W08 W09 U01 U02 U03 U04 U05 U06 U07 U08 U10 U11 U12 U13 K01 K02 K03 K04 K05 K06 K07 K08 K09 K10 K11 K12	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
12	W04INA-SM4119G	Malicious Cryptography and Advanced Defences	2	0	2	0	0	W01 W02 W03 W04 W05 W06 W07 W08 W09 W10 U01 U02 U03 U04 U05 U06 U07 U08 U09 U10 U11 U12 U13 K01 K02 K03 K04 K05 K06 K07 K08 K09 K10 K11 K12	60	180	6	6	4	Twl/Zw(3)	Z	-	DN	P(3)	S

13	W04INA-SM4120G	Privacy Enhancing Technologies	2	2	0	0	0	W01 W02 W03 W04 W05 W07 W08 W09 W10 U01 U02 U03 U04 U05 U06 U07 U08 U09 U10 U11 U12 U13 K01 K02 K03 K04 K05 K06 K07 K08 K09 K10 K11 K12	60	180	6	6	4	Twl/Zw(3)	Z	-	DN	P(3)	S
14	W04INA-SM4121G	Machine Learning and Security	2	0	2	0	0	W01 W02 W03 W04 W05 W06 W07 W08 W09 W10 U01 U02 U03 U04 U05 U06 U07 U08 U09 U10 U11 U12 U3 K01 K02 K03 K04 K05 K06 K07 K08 K09 K19 K11 K12	60	180	6	6	4	Twl/Zw(2)	Z	-	DN	P(3)	S
Total			4	4	0	0			120	360	12	12	8						

Altogether in semester

Weekly number of hours					No. of hours		ECTS		
lec	cl	lab	pr	s	ZZU	CNPS	total	DN	BU
13	12	0	0	0	375	900	30	27	25

Semester 2

Obligatory courses/group of courses (18 ECTS points)

No.	Code	Name of group of courses	Weekly no of hours					LES	No. of hours			ECTS		F	Z	Course/group			
			lec	cl	lab	pr	s		ZZU	CNPS	DN	BU	uw			c	p	t	

1	W04INA-SM4005G	Embedded Security Systems	2	0	2	0	0	0	W01 W02 W03 W04 W05 W06 W07 W08 W09 W10 U01 U02 U03 U04 U05 U06 U09 U10 U12 U13 K02 K03 K05 K06 K07 K08 K09 K10 K12	60	150	5	5	4	Twl/Zw(2)	Z	-	DN	P(3)	S
2	W04INA-SM4007G	Security and Privacy by Design	2	1	1	0	0	0	W01 W02 W04 U01 U02 U03 U04 U06 U08 K03 K05 K07	60	90	3	3	3	Twcl/Zw(1)	E	-	DN	P(2)	S
3	W04INA-SM4011G	Communication and Security Infrastructure	2	0	2	0	0	0	W01 W02 W03 W04 W06 W07 U01 U02 U03 U06 U10 U13 K02 K04 K09 K10	60	120	4	4	4	Twl/Zw(2)	Z	-	DN	P(2)	S
4	W04INA-SM4012G	Software Engineering Lab in Cybersecurity	0	0	2	0	0	0	W01 W02 W03 W04 W05 W06 W07 W08 W09 U01 U02 U03 U04 U05 U06 U08 U09 U10 U11 U12 U13 K01 K02 K03 K04 K05 K06 K07 K08 K09 K10 K11 K12	30	60	2	2	2	T	Z	-	DN	P(2)	S
5	W08INA-SM4004S	Ethics of New Technologies	0	0	0	0	1	1	W08 W10 U10 K05 K11 K12	15	60	2	0	1	T/Z	Z	O	-	-	KO
6	W04INA-SM4013G	Quantum Physics and Computations	1	0	0	0	0	0	W01 W02 W03 W04 W05 W07 U03 U04 U05 U06 U08 U10 U11 U12 U13 K01 K02 K03 K04 K05 K06 K08 K09 K10 K11	15	30	1	0	1	T/Z	Z	O	-	-	KO
7	SJO-SM0001	Foreign language (B2+)	0	1	0	0	0	0	U07 K11	15	30	1	0	0.5	T	Z	O	-	P(1)	KO
Total			7	2	7	0	1			255	540	18	14	15.5						

Optional courses/group of courses (2 group courses, 12 ECTS points)

No.	Code	Name of group of courses	Weekly no of hours	LES	No. of hours	ECTS	F	Z	Course/group
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			lec	cl	lab	pr	s		ZZU	CNPS		DN	BU		uw	c	p	t	
1	W04INA-SM4101G	Distributed Algorithms	2	1	1	0	0	W01 W02 W03 W04 U01 U02 U03 U04 U05 K01 K03 K04 K07	60	180	6	6	4	Twcl/Zw(2)	Z	-	DN	P(4)	S
2	W04INA-SM4102G	Data Mining	2	1	1	0	0	W01 W02 W04 W07 U01 U03 U05 U06 U12 U13 K02 K03 K04 K07 K08 K10	60	180	6	6	4	Twcl/Zw(2)	Z	-	DN	P(4)	S
3	W04INA-SM4103G	Applied Stochastic with Applications for Security and Privacy	2	2	0	0	0	W01 W02 W03 W04 W05 U01 U02 U03 U04 U05 U06 U08 U10 U12 K02 K03 K05 K06 K07 K10 K12	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
4	W04INA-SM4105G	Digital Signal Processing	2	2	0	0	0	W01 W02 W03 W04 W05 U01 U02 U03 U04 U06 U08 K02 K03 K07 K10	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
5	W04INA-SM4107G	Introduction to Electronics for Security Engineers	2	2	0	0	0	W01 W02 W03 W04 W05 W06 W07 W08 W09 W10 U01 U02 U03 U04 U05 U06 U08 U10 U11 U12 K02 K03 K04 K06 K07 K08 K09 K10	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
6	W04INA-SM4109G	Identification and Biometric Systems	2	2	0	0	0	W01 W02 W04 W05 W06 W07 W08 W09 U01 U02 U03 U04 U05 U06 U07 U08 U09 U10 U11 U12 U13 K03 K05 K06 K07 K08 K09 K11 K12	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
7	W04INA-SM4110G	Monographic Lecture	2	2	0	0	0	W04 W05 U01 U05 U06 U07 U11 U12 K03	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
8	W04INA-SM4112G	Secure Cloud Computing	2	0	2	0	0	W02 W03 W04 W05 W07 U03 U05 U06 K01 K03 K05 K09	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
9	W04INA-SM4113G	Elliptic Curves for Developers	2	0	2	0	0	W02 W03 W04 U03 U06 K02 K03	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S

10	W04INA-SM4114G	Monographic Lecture on Computer Security	2	1	1	0	0	W04 W05 U01 U025 U06 U11 U12 K03	60	180	6	6	4	Twcl/Zw(2)	Z	-	DN	P(4)	S
11	W04INA-SM4118G	Blockchain and Cryptocurrencies	2	0	2	0	0	W01 W02 W03 W04 W05 W07 W08 W09 U01 U02 U03 U04 U05 U06 U07 U08 U10 U11 U12 U13 K01 K02 K03 K04 K05 K06 K07 K08 K09 K10 K11 K12	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
12	W04INA-SM4119G	Malicious Cryptography and Advanced Defences	2	0	2	0	0	W01 W02 W03 W04 W05 W06 W07 W08 W09 W10 U01 U02 U03 U04 U05 U06 U07 U08 U09 U10 U11 U12 U13 K01 K02 K03 K04 K05 K06 K07 K08 K09 K10 K11 K12	60	180	6	6	4	Twl/Zw(3)	Z	-	DN	P(3)	S
13	W04INA-SM4120G	Privacy Enhancing Technologies	2	2	0	0	0	W01 W02 W03 W04 W05 W07 W08 W09 W10 U01 U02 U03 U04 U05 U06 U07 U08 U09 U10 U11 U12 U13 K01 K02 K03 K04 K05 K06 K07 K08 K09 K10 K11 K12	60	180	6	6	4	Twl/Zw(3)	Z	-	DN	P(3)	S
14	W04INA-SM4121G	Machine Learning and Security	2	0	2	0	0	W01 W02 W03 W04 W05 W06 W07 W08 W09 W10 U01 U02 U03 U04 U05 U06 U07 U08 U09 U10 U11 U12 U3 K01 K02 K03 K04 K05 K06 K07 K08 K09 K19 K11 K12	60	180	6	6	4	Twl/Zw(2)	Z	-	DN	P(3)	S
Total			4	4	0	0			120	360	12	12	8						

Altogether in semester

Weekly number of hours					No. of hours		ECTS		
lec	cl	lab	pr	s	ZZU	CNPS	total	DN	BU
11		13	0	1	375	900	30	26	23.5

Semester 3

Obligatory courses/group of courses (24 ECTS points)

No.	Code	Name of group of courses	Weekly no of hours					LES	No. of hours		ECTS			F	Z	Course/group			
			lec	cl	lab	pr	s		ZZU	CNPS		DN	BU			uw	c	p	t
1	W04INA-SM4003D	MSc Thesis	0	0	0	0	0	W04 W05 W06 W09 W10 U01 U02 U03 U04 U06 U07 U08 U10 U11 U12 K01 K02 K03 K04 K05 K10 K12	0	600	20	20	10		Z	-	DN	P(20)	K
2	W04INA-SM4002S	MSc Seminar	0	0	0	0	2	W06 W08 W10 U06 U08 U09 K02 K04 K05 K07 K08 K12	30	60	2	2	2	T/Z	Z	-	DN	P(2)	K
3	SJO-SM0002	Foreign language 2 (A1 lub A2)	0	3	0	0	0	K11	45	60	2	0	1.5	T	Z	O	-	P(2)	KO
		Total		3			2		75	720	24	22	13.5						

Optional courses/group of courses (1 group course, 6 ECTS points)

No.	Code	Name of group of courses	Weekly no of hours					LES	No. of hours		ECTS			F	Z	Course/group			
			lec	cl	lab	pr	s		ZZU	CNPS		DN	BU			uw	c	p	t
1	W04INA-SM4101G	Distributed Algo- rithms	2	1	1	0	0	W01 W02 W03 W04 U01 U02 U03 U04 U05 K01 K03 K04 K07	60	180	6	6	4	Twcl/Zw(2)	Z	-	DN	P(4)	S
2	W04INA-SM4102G	Data Mining	2	1	1	0	0	W01 W02 W04 W07 U01 U03 U05 U06 U12 U13 K02 K03 K04 K07 K08 K10	60	180	6	6	4	Twcl/Zw(2)	Z	-	DN	P(4)	S

3	W04INA-SM4103G	Applied Stochastic with Applications for Security and Privacy	2	2	0	0	0	W01 W02 W03 W04 W05 U01 U02 U03 U04 U05 U06 U08 U10 U12 K02 K03 K05 K06 K07 K10 K12	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
4	W04INA-SM4105G	Digital Signal Processing	2	2	0	0	0	W01 W02 W03 W04 W05 U01 U02 U03 U04 U06 U08 K02 K03 K07 K10	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
5	W04INA-SM4107G	Introduction to Electronics for Security Engineers	2	2	0	0	0	W01 W02 W03 W04 W05 W06 W07 W08 W09 W10 U01 U02 U03 U04 U05 U06 U08 U10 U11 U12 K02 K03 K04 K06 K07 K08 K09 K10	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
6	W04INA-SM4109G	Identification and Biometric Systems	2	2	0	0	0	W01 W02 W04 W05 W06 W07 W08 W09 U01 U02 U03 U04 U05 U06 U07 U08 U09 U10 U11 U12 U13 K03 K05 K06 K07 K08 K09 K11 K12	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
7	W04INA-SM4110G	Monographic Lecture	2	2	0	0	0	W04 W05 U01 U05 U06 U07 U11 U12 K03	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
8	W04INA-SM4112G	Secure Cloud Computing	2	0	2	0	0	W02 W03 W04 W05 W07 U03 U05 U06 K01 K03 K05 K09	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
9	W04INA-SM4113G	Elliptic Curves for Developers	2	0	2	0	0	W02 W03 W04 U03 U06 K02 K03	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
10	W04INA-SM4114G	Monographic Lecture on Computer Security	2	1	1	0	0	W04 W05 U01 U025 U06 U11 U12 K03	60	180	6	6	4	Twcl/Zw(2)	Z	-	DN	P(4)	S

11	W04INA-SM4118G	Blockchain and Cryptocurrencies	2	0	2	0	0	W01 W02 W03 W04 W05 W07 W08 W09 U01 U02 U03 U04 U05 U06 U07 U08 U10 U11 U12 U13 K01 K02 K03 K04 K05 K06 K07 K08 K09 K10 K11 K12	60	180	6	6	4	Twc/Zw(3)	Z	-	DN	P(3)	S
12	W04INA-SM4119G	Malicious Cryptography and Advanced Defences	2	0	2	0	0	W01 W02 W03 W04 W05 W06 W07 W08 W09 W10 U01 U02 U03 U04 U05 U06 U07 U08 U09 U10 U11 U12 U13 K01 K02 K03 K04 K05 K06 K07 K08 K09 K10 K11 K12	60	180	6	6	4	Twl/Zw(3)	Z	-	DN	P(3)	S
13	W04INA-SM4120G	Privacy Enhancing Technologies	2	2	0	0	0	W01 W02 W03 W04 W05 W07 W08 W09 W10 U01 U02 U03 U04 U05 U06 U07 U08 U09 U10 U11 U12 U13 K01 K02 K03 K04 K05 K06 K07 K08 K09 K10 K11 K12	60	180	6	6	4	Twl/Zw(3)	Z	-	DN	P(3)	S
14	W04INA-SM4121G	Machine Learning and Security	2	0	2	0	0	W01 W02 W03 W04 W05 W06 W07 W08 W09 W10 U01 U02 U03 U04 U05 U06 U07 U08 U09 U10 U11 U12 U3 K01 K02 K03 K04 K05 K06 K07 K08 K09 K19 K11 K12	60	180	6	6	4	Twl/Zw(2)	Z	-	DN	P(3)	S
Total			2	2	0	0			60	180	6	6	4						

Altogether in semester

Weekly number of hours					No. of hours		ECTS		
lec	cl	lab	pr	s	ZZU	CNPS	total	DN	BU

2	5	0	2	135	900	30	28	17.5
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2 Set of examination in semester arrangement

No.	Code	Name	Semester
1	W04INA-SM4001G	Compliance and Operational Security	1
2	W04INA-SM4008G	Cryptography	1
3	W04INA-SM40-G	Security Infrastructure	2
4	W04INA-SM4005G	Embedded Security Systems	2
5	W04INA-SM40-G	Security and Privacy by Design	2

3 Numbers of allowable deficit of ECTS points after particular semesters

Semester	Allowable deficit
1	12
2	12

Opinion of student government legislative body

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Date

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Name and surname, signature of student representative

.....
Date

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Dean's signature