



UNIVERSITY OF SOFIA "St. KLIMENT OHRIDSKI"

CURRICULUM

Rector,

(signature)

Professional Direction: Physical Sciences

Educational degree: Master of sciences (M. Sc.)

Educational Subject: Engineering Physics

Duration: 3 Terms

Master's Programme:
Wireless Networks and Devices

Form of Education: full time

Professional Qualification:
Master in Engineering Physics –
Wireless Networks and Devices

CONTENS

№	COURSE	Type of course: C, E, O	Exam E	Exam during the term T	ECTS- credits	Total hours in compulsory classes	Hours			Hours during the terms		
							Lectures	Seminar classes	Laboratory classes	Terms		
										I term (winter) total hours	II term (summer) total hours	III term (winter) total hours
1	2	3	4	5	6	7	8	10	11	12	13	

1	2	3	4	5	6	7	8		10	11	12	13
COMPULSORY COURSES												
1	Modulations and coding in the digital communications	C	1		6	75	45	15	15	45+15+15	-	-
2	Wireless networks and protocols	C	1		4.5	60	45	15	0	45+15+0	-	-
3	Computer practice in communication systems	C		1	4.5	45	0	0	45	0+0+45	-	-
4	Information and statistics in the wireless communications	C	2		4.5	60	45	15	0	-	45+15+0	-
5	Microwave communication devices and systems	C	2		6	75	45	15	15	-	45+15+15	-
3c	Integrated circuits and devices for wireless networks	C	2		4.5	60	45	15	0	-	45+15+0	-
4c	Laboratory practice in Integrated circuits and devices for wireless networks	C		2	5	45	0	0	45	-	0+0+45	-
INTRODUCTORY ELECTIVE COURSES (the students must choose 1 course from the introductory elective courses with 5 ECTS credits (1/5))												
1	Introduction to wireless communications	IE	1		5	60	30	30	0	30+30+0	-	-
2	Applied Electrodynamics for MSc students	IE	1		5	60	30	30	0	30+30+0	-	-
3	Modern Physics for Engineers	IE	1		5	60	60	0	0	60+0+0	-	-
ELECTIVE COURSES (Ist term: 2courses with 10 ECTS credits (2/10); IInd term: 2 courses with 10 ECTS credits (2/10))												
1	Interfaces in the wireless communications	E	1		5	60	30	0	30	30+0+30	-	-
2	Mobile radio-channels	E	1		5	60	30	30	0	30+30+0	-	-
3	Microwave measurements in communications	E	1		5	60	30	0	30	30+0+30	-	-
4	Fixed and Mobile satellite communication systems	E	1		5	60	30	15	15	30+15+15	-	-
5	Creation of toolbox on MATLAB for communication applications	E		1	5	45	0	0	45	0+0+45	-	-
6	Practical programming on Visual C++	E		1	5	60	30	0	30	30+0+30	-	-
7	Processors in the wireless communications	E	2		5	60	30	0	30	-	30+0+30	-
8	Antennas for the wireless communication systems	E	2		5	60	30	15	15	-	30+15+15	-
9	RFID's	E	2		5	60	30	15	15	-	30+15+15	-
10	Security of the communication networks and systems	E	2		5	60	30	30	0	-	30+30+0	-
11	Operational systems and open-source applications in the communications (Lab. exercises)	E		2	5	45	0	0	45	-	0+0+45	-
12	Electromagnetic compatibility (EMC)	E		2	5	60	30	15	15	-	30+15+15	-
13	One-term course in advanced topics in communications (winter)	E		1	5	60	30	30		30+30	-	-
14	One-term course in advanced topics in communications (summer)	E		2	5	60	30	30		-	30+30	-

OPTIONAL COURSES												
1	Management of the communication networks	O	1/3		2	30	30	0	0	30+0+0	-	-
2	Management of the innovations	O	2		2	30	30	0	0	-	30+0+0	-
1	2	3	4	5	6	7	8	9	10	11	12	13
	Hours for education in Compulsory Classes	C	5	2	35	420	225	75	120	180	240	0
	Total hours for education in the MCs program (compulsory, elective, practice, MSc thesis)				90	990	315	705		345	345	300
	Number of exams at the end of the term									4	4	MSc. Thesis
	Number of exams during the term									2	2	1
	Total ECTS credits				Totally 90 ECTS credits					30	30	30

					Educational Practices in Training Groups				MSc thesis	
					Term	Weeks	Hours	ECTS credits	MSc. Thesis : (15 ECTS credits)	
Name of the training group										
					3	15	150	15	First Session: <u>January-February</u> Second Session: <u>July</u>	
					3	15	150	15		
The form of control is exams during the 3 rd term. The supervisor of the practice is responsible for the control exam.										

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Notes:

1. The CIRRICULUM of the Master's Programme is approved by the Faculty Council of the Faculty of Physics (Протокол № /.....)
2. The lecture courses are holding in the Faculty in Physics, Educational Hall A410 "Prof. Stefan Alexandrov".
3. The students pay the yearly taxes, approved by the Academic Council of the University of Sofia "St. Kliment Ohridski".
4. The English language is the official language of the Master's programme.
5. The programme is supporting by Bulgarian and foreign companies in the area of communication and electronics.
6. The Master's Programme has Programme Council, which includes the lecturers of the compulsory courses, one representative of the supporting companies and one student (the group leader). The Programme Council is responsible for the whole educational process. The Programme Chair is responsible for the operative management of the educational process.
7. The each Lecturer of the Master's Programme has responsibility to ensure suitable educational materials in English. They should be preliminary approved by the Programme Council.
8. The each student gets officially an individual task in the frame of one of the Training groups (2-5 students). The each group has Supervisor (lecturer in the program), which is responsible for the education of the students into the group. The education is problem-orientated. The students are working in-group. Each student presents own results of his/her personal task as a part of the whole training project. The final project is the MSc. Thesis of the student.

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