Educational Specialty: ENGINEERING PHYSICS

M.Sc. Programme: "Aerospace Engineering and Communications" (on English) (in two modules)

Form of Education: full time (regular), Duration: 3 Terms (1.5 years)

Course	ETCS credits	Exam or Score during the Term (E/T)	Total Hours Lectures Seminars; Practical Exercises (L + S + P)
FIRST YEAR			
MODULE 1 "Aerospace Engineering (small aerospace apparatus)" (M1)			
First Term (winter) M1			
Introductive Compulsory Courses for M1			
Basic Principles of Mission Design with Small Aerospace Vehicles	5	E	30 + 30 + 0
Introductive Selectable Courses – 1 course with **5** ECTS credits (1/5)			
Satellite Systems and Satellite information	5	E	45 + 15 + 0
Space Physics	5	E	45 + 30 + 0
Common Compulsory Courses			
Fixed and Mobile Satellite Communication Systems	5	E	30 + 15 + 15
Computer Practice in Communication Networks and Protocols	5	T	0 + 0+ 45
Compulsory Courses for M1			
Aerodynamics and Orbital Dynamics	5	E	30 + 30 + 0
Aerospace Control Systems	5	E	30 + 30 + 0
Second Term (summer) M1			
Common Compulsory Courses			
Integrated Circuits	5	E	30 +0 + 30
Compulsory Courses for M1			
Navigation and Telemetry of Small Aerospace Apparatus	5	E	30 + 15 + 15
Photovoltaic Systems and Power Sources in Aerospace Apparatus	5	E	30 + 15+ 15
Selectable Courses for M1 – 3 courses with **15** ECTS credits (3/15)			
Cosmic Impact on the Environment	5	E	45 + 0 + 15
Space Weather and Its Effects on Space Infrastructure and Engineered Systems	5	E	30 + 30 + 0
Analysis, Interpretation and Application of the Satellite Images	5	T	15 + 45 + 0
Unmanned Aircrafts	5	T	30 + 30 + 0

University Micro- and Nano-Satellites and Applications	5	E	45 + 15 + 0
Software Tools for Aerospace Engineering	5	E	0 + 15 + 45
Management of Innovations	5	T	30 + 30 + 0
Management of Aerospace Vehicles and their Applications	5	T	30 + 30 + 0
One-Term Course in Advanced Topics of Aerospace Engineering (summer)	5	T	30 + 30
Optional Courses			
English language (payable separately by the students)			
Russian language (payable separately by the students)			
Bulgarian language (payable separately by the students)			
MODULE 2 "Wireless and Satellite Communications" M2			
First Term (winter) (M2)			
Introductive Compulsory Courses for M2			
Applied Electrodynamics for MSc. Students	5	E	30 + 30 + 0
Introductive Selectable Courses – 1 course with **5** ECTS credits (1/5)			
Introduction to Wireless Communications	5	E	30 + 30 + 0
Modern Physics for Engineers	5	E	60 + 0 + 0
Common Compulsory Courses			
Fixed and Mobile Satellite Communication Systems	5	E	30 + 15 + 15
Computer Practice in Communication Networks and Protocols	5	T	0 + 0+ 45
Compulsory Courses for M2			
Modulations and Coding in the Digital Communications	6	E	45 + 15 + 15
Microwave and Wireless Technique	5	E	45 + 15 + 15
Second Term (summer) (M2)			
Common Compulsory Courses			
Integrated Circuits	5	E	30 +0 + 30
Compulsory Courses for M2			
Antennas for Wireless Communication Systems	5	E	30 + 15 + 15
Operational Systems and Open-Source Applications in the Communications	5	T	0 + 0+ 45

Selectable Courses for M2 – 3 courses with **15** ECTS credits (3/15)			
Security of the Communication Networks and Systems	5	E	30 + 30 + 0
Optical Networks and Devices	5	E	45 + 15 + 0
Radio-Frequency Identification Devices (RFID's)	5	E	30 + 15 + 15
Electromagnetic Compatibility in Communications	5	E	30 + 15 + 15
Management of Innovations	5	T	30 + 30 + 0
One-term Course in Advanced Topics in Communications (summer)	5	T	30 + 30
Optional Courses			
English language (payable separately by the students)			
Russian language (payable separately by the students)			
Bulgarian language (payable separately by the students)			
SECOND YEAR			
MODULE 1 "Aerospace Engineering (small aerospace apparatus)" (M1)			
Third Term (winter) M1			
Selectable Courses for M1 – 2 courses with **10** ECTS credits (2/10)			
Optical Instruments and Optical Technologies	5	T	30 + 15 + 15
Plasma and Plasma Propulsion Generators for Satellites	5	E	30 + 15 + 15
Modern Electromagnetic Materials and Electronic Devices	5	E	30 + 15 + 0
One-Term Course in Advanced Topics of Aerospace Engineering (winter)	5	T	30 + 30
Optional Courses			
English language (payable separately by the students)			
Russian language (payable separately by the students)			
Bulgarian language (payable separately by the students)			
Compulsory M.Sc. Thesis			
M.Sc. Thesis	**15**	**Defence of M.Sc. Thesis: February (1st) / July (2nd)**	

Selectable Practice for M1			
Educational Practice in Aero-Space Engineering (*selectable practice*)	-	T	75
Individual Preparation of the M.Sc. Thesis (*instead of the practice*)	-	T	75
MODULE 2 "Wireless and Satellite Communications" M2			
Third Term (winter) (M2)			
Selectable Courses for M2 – **2** courses with **10** ECTS credits (2/10)			
Communication and Information Systems for Data Transfer	5	E	30 + 30 + 0
Mobile Radio-Channels	5	E	30 +30 + 0
Microwave Measurements in Communications	5	E	30 + 0 + 30
Practical Programming on Visual C++	5	T	30 + 0 + 30
Wireless Networks and Protocols	5	E	45 + 15 + 0
Management of the Communication Networks	5	T	30 + 30 + 0
One-Term Course in Advanced Topics of Communications (winter)	5	T	30 + 30
Optional Courses			
English language (payable separately by the students)			
Russian language (payable separately by the students)			
Bulgarian language (payable separately by the students)			
Compulsory M.Sc. Thesis			
M.Sc. Thesis	**15**	**Defence of M.Sc. Thesis: February (1st) / July (2nd)**	
Selectable Practice for M1			
Educational Practice in Wireless and Satellite Communications (*selectable practice*)	-	T	75
Individual Preparation of the M.Sc. Thesis (*instead of the practice*)	-	T	75
Total: 90 ECTS credits for each module; 10 Exams (E); 5 scores during the Term (T)			