

English for Professional Success, English C1*	E	c	2	0	2	0	*										en	-						
Elective Block 2 (6 credits from the list below, or the asterisked (*) courses in elective block 1, if not taken there)	E	c	6	3	2	0											#	en						
Economics 1	E	c	2	2	0	0						*		@				en	-					
Management and Business Economics	E	c	3	2	0	0						*						en	-					
Cross-cultural Communication, English B2	E	c	2	0	2	0						*						en	-					
Psychology	E	e	3	2	0	0						*						en	-					
Ergonomics	E	c	2	2	0	0						@	*	@				en	-					
The Economic Law of the European Union	E	c	3	2	0	0						@	*	@				en	-					
Corporate Law	E	e	3	2	0	0						*		@				en	-					
Safety Culture	E	c	2	0	2	0						*							-					
Presentation Skills	C	c	2	0	2	0											#	en	-					
THESIS WORK																								
Thesis work	C	c	15															#	>=150 credits					
INTERNSHIP																								
6 weeks internship after semester 6	C	a	0															#	Must have selected specialization					
SUMMED CREDITS																	31	29	30	30	20	12	17	
CONTACT HOURS (lecture)																	10	10	12	9	8	6	0	
CONTACT HOURS (practice)																	12	4	6	5	2	4	2	
CONTACT HOURS (laboratory)																	2	6	4	7	4	0	0	
CONTACT HOURS (TOTAL)																	24	20	22	21	14	10	2	
NUMBER OF EXAMS																	2	2	4	2	2	0	0	
NUMBER OF COURSEWORK GRADES																	3	2	2	4	3	1	1	
OPTIONAL COURSES (any BME course)			10															0	6	4				
SPECIALIZATIONS			31															10	12	9				
Nanotechnology and Quantum Applications, Nuclear Technologies and Sustainable Energetics, Scientific Data Processing																	Specialization selection criteria: >=90 credits, Modern Physics							
TOTAL NUMBER OF CREDITS			210															31	29	30	30	30	30	30

Physicist-Engineer - Nanotechnology and Quantum Applications Specialization

Specialization Responsible: Dr. Szabolcs Csonka

Legend

Type: C - compulsory, E - elective modules, O - optional

Grading: e - examination, c - coursework grade, a - audit

- Proposed semester, *-proposed semester of courses in elective block, @-alternative semester

Subject	Type	Eval	Credit	Hours			Proposed Semester							Language	Prerequisites			
				Lect	Prac	Lab	1	2	3	4	5	6	7					
COMPULSORY COURSES				18														
Advanced Physics Course (2 subjects from the courses below)				E	e	6	2	0	0						@	#	en	
	Advanced Quantum Physics	E	e	3	2	0	0								*	en	Modern Physics	
	Introduction to Semiconductor Physics, Nanophysics and Magnetism	E	e	3	2	0	0								*	en	Solid State Physics	
	Optics	E	e	3	2	0	0								*	en	Electrodynamics and Optics	
	Specialization Laboratory 1	C	c	6	0	0	4								#	en	Measurement Design and Laboratory Exercises	
	Specialization Laboratory 2	C	c	6	0	0	4								#	en	Specialization Laboratory 1	
ELECTIVE COURSES				13														
Quantum Information Processing																		
	Introduction to Quantum Computing and Communications	E	c	2	2	0	0							#	@	en	Vector and Matrix Algebra, Modern Physics	
	Quantum Information Processing	E	e	3	2	0	0							#	en	Modern Physics		
	Advanced Quantum Mechanics Problem Solving	E	c	3	0	2	0							#	en	Modern Physics, parallel: Adv. Quant. Mechanics		
	Artificial Intelligence in Data Science	E	c	5	1	2	0							@	#	en	Introduction to Numerical Algorithms	
Nanotechnology, Semiconductor Technology, Materials Science																		
	Advanced Semiconductor Devices	E	e	3	2	0	0							#	en	Solid State Physics		
	Advanced Micro and Nanoscale Material Processing and Analysis Techniques	E	c	3	2	0	0							#	en	Modern Physics		
	Spectroscopic Methods in Material Science	E	e	3	2	0	0							#	@	en	Modern Physics	
	Chemical Methods in Nanotechnology	E	e	3	2	0	0							@	#	en	Technical Chemistry	
Optics and Laser Technology																		
	Optics Problem Solving	E	c	2	0	2	0							#	@	en	Electrodynamics and Optics, parallel: Optics	
	Laser Technology	E	c	3	2	0	0							#	@	en	Electrodynamics and Optics	
	Microscopy	E	c	3	2	0	0							#	en	Electrodynamics and Optics		
	Optical Metrology	E	e	3	2	0	0							#	en	Electrodynamics and Optics		
Further Elective Courses																		
	Measurement Control Project Work in LabVIEW Environment	E	c	3	0	0	2							#	en	Programming 1		
	Data Science Aided Measurements	E	c	3	0	0	2							#	en	Intr. to Machine Learning, Meas. Tech. Laboratory		

Physicist-Engineer - Nuclear Technologies and Sustainable Energetics Specialization

Specialization Responsible: Szieberth Máté

Legend

Type: C - compulsory, E - elective modules, O - optional

Grading: e - examination, c - coursework grade, a - audit

- Proposed semester, *-proposed semester of courses in elective block, @-alternative semester

Subject	Type	Eval	Credit	Hours			Proposed Semester							Language	Prerequisites	
				Lect	Prac	Lab	1	2	3	4	5	6	7			
COMPULSORY COURSES			12													
Specialization Laboratory 1	C	c	6	0	0	4							#	en	Modern Physics, Meas. Techniques, Meas. Design and Lab. Exercises	
Specialization Laboratory 2	C	c	6	0	0	4							#	en	Specialization Laboratory 1	
ELECTIVE COURSES (The asterisked courses (*) from the Elective Subjects on Engineering elective module in the main curriculum can be also taken if not taken there)			19													
Sustainable Development and Energetics	E	c	3	2	0	0							#	en	Modern Physics	
Radioactive Waste Management	E	c	3	2	0	0							#	en	Radiation Protection	
Radiochemistry and Nuclear Chemistry	E	c	4	3	0	0							#	en	Radiation Protection	
Introduction to CFD Methods	E	c	4	1	0	2							#	en	Multivariable Calculus	
Monte Carlo methods	E	e	4	2	1	0							#	en	Probability Theory	
Radiation Detection and Measurement	E	e	3	2	0	0							#	en	Modern Physics, Measurement Techniques	
Medical Imaging Systems	E	c	3	2	0	0							#	en	Modern Physics, Measurement Techniques	
Introduction to Fusion Plasma Physics	E	e	3	2	0	0							#	@	Multivariable Calculus, Modern Physics	
Nuclear Safety	E	c	3	2	0	0							#	@	Modern Physics	
Thermal Hydraulics of Nuclear Power Plants	E	c	5	3	1	0							#	@	Modern Physics, Thermodynamics and Statistical Physics	
Reactor Physics	E	e	5	3	1	0							#	@	Modern Physics	

Physicist-Engineer - Scientific Data Processing Specialization Specialization Responsible: Dr. János Török

Legend

Type: C - compulsory, E - elective modules, O - optional

Grading: e - examination, c - coursework grade, a - audit

- Proposed semester

Subject	Type	Eval	Credit	Hours			Proposed Semester							Language	Prerequisites	
				Lect	Prac	Lab	1	2	3	4	5	6	7			
COMPULSORY COURSES				21												
Introduction to Experimental Data Handling	C	e	3	2	0	0							#		en	Probability Theory
Complex Networks	C	e	4	2	1	0							#		en	Probability Theory
Introduction to Data Science	C	e	4	3	0	1							#		en	Intr. to Exp. Data Handl., Intr. to Machine Learning, Compl. Netw.
Programming Exercises for Data Science	C	c	2	0	1	0							#		en	parallel: Introduction to Data Science
Data Science Aided Measurements	C	c	3	0	0	2							#		en	Intr. to Machine Learning, Meas. Tech. Laboratory
Artificial Intelligence in Data Science	C	c	5	1	2	0							#		en	Introduction to Machine Learning
ELECTIVE COURSES				10												
Data-driven and Agent-based Modeling	E	c	4	1	0	2							#		en	Intro. to Machine Learning, Intro. to Exp. Data Handling
Monte Carlo Methods	E	e	4	2	1	0							#		en	Probability Theory
Measurement Control Project Work in LabVIEW Environment	E	c	3	0	0	2							#		en	Programming 1
The Fundamentals and Applications of Finite Element Modeling	E	c	3	0	0	2							#		en	Electrodynamics and Optics, Multivariable Calculus
Medical Imaging Systems	E	c	3	2	0	0							#		en	Modern Physics, Measurement Techniques