

Physicist MSc (Responsible: Gábor Takács)

Scientific Data Processing Specialization (Responsible: János Török)

Legend

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

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

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

E/O - Proposed semester for courses running biannually: E (for students starting in even year) O

Subject	Type	Eval	Credit	Hours			Semester (spring start)				Semester (fall start)				Semester course active	
				Lect	Prac	Lab	1	2	3	4	1	2	3	4		
GENERAL CURRICULUM																
CRITERION COURSES				0												
Basic Physics Knowledge DP	C	a	0	0	0	0									every semester	
Internship DP	C	a	0	0	0	0		#		#			#		every fall	
CORE SUBJECTS				13												
Artificial Intelligence in Physics	C	e	5	1	0	2		#			#				every fall	
Physics Laboratory NM	C	c	6	0	0	4		#			#				every fall	
Colloquium Series 1	C	c	1	1	0	0		#				#			every semester	
Colloquium Series 2	C	c	1	1	0	0			#				#		every semester	
MANAGEMENT AND COMMUNICATION (one course from the list below)			E	3	2	0	0	0	0	3	0	0	3	0	0	
Innovation and Green Finance	E	e	3	2	0	0			*			*			every semester	
English for University Studies B2+	E	e	3	0	2	0			*			*			every spring	
Public Speaking B2+	E	e	3	0	2	0			*			*			every spring	
Academic Writing C1	E	e	3	0	2	0			*			*			every spring	
Professional Speaking C1	E	e	3	0	2	0			*			*			every spring	
Discussing Engineering C1	E	e	3	0	2	0			*			*			every spring	
CORE ELECTIVE PHYSICS COURSE (3 courses from the list below)			E	15				10	5	0	0	5	5	5	0	
Statistical Physics	E	e	5	2	1	0		*				*	*	*	every fall	
Particle Physics	E	e	5	2	1	0		*				*	*	*	every fall	
Nuclear Physics	E	e	5	2	1	0	*		*			*	*	*	every spring	
Quantum Physics of Atoms	E	e	5	2	1	0	*		*			*	*	*	every spring	
Nanophysics	E	e	5	2	1	0	*		*			*	*	*	every spring	
Nanotechnology and Materials Science	E	e	5	3	0	0		*				*	*	*	every fall	
Fundamentals of Photonics	E	e	5	2	1	0		*				*	*	*	every fall	
Computer Simulations in Physics	E	e	5	2	0	1	*		*			*	*	*	every spring	
DIPLOMA WORK																
Diploma Work DP 1	C	c	10	0	0	7				#				#	every semester	
Diploma Work DP 2	C	c	20	0	0	13				#				#	every semester	
OPTIONAL COURSES (any BME course)			O	6				0	0	6	0	0	3	3	0	
SCIENTIFIC DATA PROCESSING SPECIALIZATION																
COMPULSORY FROM THE CORE PHYSICS COURSE BLOCK																
Statistical Physics	E	e	5	2	1	0		*			*	*	*	*	every fall	
Computer Simulations in Physics	E	e	5	2	0	1	*					*	*	*	every spring	
COMPULSORY SPECIALISATION COURSES																
Seminar DP 1	C	c	2	0	2	0	#				#				every semester	
Seminar DP 2	C	c	2	0	2	0		#				#			every semester	
Seminar DP 3	C	c	2	0	2	0			#				#		every semester	
Project Laboratory DP 1	C	c	7	0	0	5		#				#			every semester	
Project Laboratory DP 2	C	c	13	0	0	8			#				#		every semester	
AI Assisted Scientific Programming	C	e	5	0	0	3	#					#			every spring	
ELECTIVE SPECIALIZATION COURSES (30 credits from the list below)			E	22				13	4	5	0	12	5	5	0	
Elective Project Laboratory DP	E	e	15	0	0	10	*	*	*	*		*	*	*	every semester	
Data-driven and Agent-based Modeling	E	c	4	1	0	2	*					*	*	*	every spring	
Financial Engineering	E	e	3	2	0	0	*					*	*	*	every spring	
Artificial Intelligence Project Work	E	c	3	0	0	2			*			*	*	*	every spring	
Non-equilibrium Statistical Physics	E	e	5	2	1	0	*		*			*	*	*	every spring	
Classical and Quantum Phase Transitions	E	e	5	2	1	0	O		E			E		O	odd spring	
Quantum Information Processing	E	e	3	2	0	0	*						*	*	every spring	
Multivariate Statistics	E	e	5	3	1	0		E		O	O		E		odd fall	
Statistical Program Packages 2	E	c	3	0	0	2		E		O	O		E		odd fall	
Markov Processes and Martingales	E	e	5	3	1	0	E		O			O		E	even spring	
Introduction to Causal Analysis of Time Series	E	e	3	2	0	0		*				*	*	*	every fall	
Evolutionary Game Theory	E	e	3	2	0	0	E		O			O		E	even spring	
Computational Neuroscience	E	c	3	2	0	0		*				*	*	*	every fall	
Data Science Aided Measurements	E	e	3	0	0	2	E		O			O		E	even spring	
Stochastic analysis	E	c	8	4	2	0	E		O			O		E	even spring	
Nonparametric Statistics and Information Theory	E	c	3	2	0	0		E		O	O		E		odd fall	
Advanced Applied Statistics with R	E	c	5	2	0	2	E		O			O		E	even spring	
TOTAL NUMBER OF CREDITS									30	30	30	30	30	31	29	30