

Degree Audit Checklist Major: Physics

Name: _____ Year of study: _____ Faculty Advisor: _____

Types	Abbr/Number	Courses	Credits ECTS	Grade	
Physics Core Courses (108 credits)	PHYS 162	Physics for Scientists and Engineers II with Laboratory	8		
	PHYS 221	Classical Mechanics I	6		
	PHYS 222	Classical Mechanics II	6		
	PHYS 261	Modern Physics with Laboratory	8		
	PHYS 270	Computational Physics with Laboratory	6		
	PHYS 280	Thermodynamics and Statistical Physics	6		
	PHYS 315	Mathematical Method in Physics	6		
	PHYS 361	Classical Electrodynamics I	6		
	PHYS 362	Classical Electrodynamics II	6		
	PHYS 370	Optics with Laboratory	8		
	PHYS 451	Quantum Mechanics I	6		
	PHYS 452	Quantum Mechanics II	6		
	MATH 162	Calculus II	8		
	MATH 263	Calculus III	8		
	MATH 273	Linear Algebra with Applications	8		
MATH 274	Introduction to Differential Equations	6			
UG Core Curriculum Framework Courses (78 credits)	PHYS 161	Physics for Scientists and Engineers I with Laboratory	8		
	MATH 161	Calculus I	8		
	CSCI 151	Programming for Scientists and Engineers	8		
	PHYS 395	Research Methods in Physics	6		
	HST 100	History of Kazakhstan	6		
	KAZ	Kazakh Language Course 1	6		
	KAZ	Kazakh Language Course 2	6		
	WCS 150	Rhetoric and Composition	6		
	Writing	200-level Writing course	6		
	SOC, PLS, ANT or ECON	Choose one course	6		
	Business	Business fundamentals and Entrepreneurship	6		
	Ethics	Applied Ethics course from School	6		
Major Electives (24 credits) any 2 of PHYS 399, 465, 474, 491	Physics Elective 1		6		
	Physics Elective 2		6		
	Physics Elective 3		6		
	Physics Elective 4		6		
Technical Electives (18 credits), at least one 300-level course	Technical Elective 1		6		
	Technical Elective 2		6		
	Technical Elective 3		6		
General Electives (12 credits)	General Elective 1		6		
	General Elective 2		6		
Honors Track (Elective)	PHYS 498	Honors Thesis Research	0		
	PHYS 499	Honors Thesis	6		
Credits Total: 240 / 246	COMPLETED:	IN PROGRESS:	TO BE DONE:		

Major Electives (24 credits) should include at least three PHYS courses of 400 level and at least two designated research courses (399, 465, 474, 491).

Technical Electives (18 credits) should include at least one course at the 300-level.

General Electives (12 credits) are unrestricted by subject and level.

<i>Elective Courses offered by Physics Department</i>	ECTS
Introductory Astronomy I (PHYS 201)	6
Introductory Astrophysics (PHYS 202)	6
Introduction to Quantum Technologies (PHYS 291)	6
Research project and internship (PHYS 299)	6
Physics Research Project (PHYS 399, <i>designated research course</i>)	6
Advanced Mathematical Physics (PHYS 411)	6
Introduction to Biophysics (PHYS 433)	6
Introduction to Chemical Physics (PHYS 443)	6
Introduction to Particle Physics (PHYS 453)	6
Astrophysics and General Relativity (PHYS 463)	6
Advanced Experimental Physics (PHYS 465, <i>designated research course</i>)	6
Introduction to Solid State Physics (PHYS 473)	6
Lasers and Photonics (PHYS 474, <i>designated research course</i>)	6
Topics in Material Science (PHYS 476)	6
Statistical Mechanics (PHYS 483)	6
Directed Study of Advanced Physics Topics (PHYS 491, <i>designated research course</i>)	6
Physics Colloquium (PHYS 495)	0

The **Honors Track** is an elective path offering high-performing students the advanced research experience providing competitive advantage towards admission into a Master and Doctoral programs in Kazakhstan and abroad. Students have to complete a research project under supervision of a Physics Faculty, then write and publicly defend the Honors Thesis. The minimal requirements is to complete **Honors Thesis Research** course PHYS 498 (0 ECTS credits) in the Fall of year 4 and **Honors Thesis** course PHYS 499 (6 ECTS credits) in the Spring of year 4. Additional option is to take PHYS 498 course also during Summer semester after year 3. The track is concluded with public defense of the Honors Thesis at the end of 8th semester, thus bringing the total credit count to 246 ECTS.