*** International Standard Program in Physics** *(Dated September 30th, 2015)*

Total credits of the curriculum : 164 credits

- **General eduacation knowledge: 38 credits**

  (*Not including physical education, military defense education, and soft skills*)

- **Basic courses: 6 credits**
- **Fundamental courses: 15 credits**
- **Core courses: 26 credits**
- **Advanced sourses: 79 credits**

  + Required: 51 credits

  + Elective: 15/171 credits

  + Supplement: 3/9 credits

  + Undergraduate thesis: 10 credits

Available curriculum

No.	Code	Subject	Credits	Credit hours			Prerequisite
				Lecture	*Practice*	*Sefl-study*	
I		**General education knowledge** *(Not including subjects 12 -14)*	**38**				
1	PHI1004	*Fundamental Principles of Marxism - Leninism 1*	2	24	6		
2	PHI1005	*Fundamental Principles of Marxism - Leninism 1*	3	36	9		PHI1004
3	POL1001	*Ho Chi Minh Ideology*	2	20	10		PHI1005
4	HIS1002	*The Revolutionary Line of the Communist Party of Vietnam*	3	42	3		POL1001
5	FLF2101	*General English 1*	4	16	40	4	
6	FLF2102	*General English 2*	5	20	50	5	FLF2101
7	FLF2103	*General English 3*	5	20	50	5	FLF2102
8	FLF2104	*General English 4*	5	20	50	5	FLF2103
9	FLF2105	*General English 5*	5		75		FLF2104
10	INT1003	*Introduction to Informatic 1*	2	10	20		
11	INT1005	*Introduction to Informatic 3*	2	12	18		INT1003
12		*Physical Education*	4				
13		*National Defence Education*	8				
14		*Soft Skills*	3				
II		**Basic courses**	**6**				
15	HIS1056	*Fundamentals of Vietnamese Culture*	3	42	3		
16	GEO1050	*Earth and Life Sciences*	3	30	10	5	
III		**Fundamental courses**	**15**				
17	PHY1106	*Linear Algebra*	3	30	15		
18	PHY1107	*Calculus 1*	3	30	15		
19	PHY1108	*Calculus 2*	3	30	15		PHY1107
20	PHY1109	*Probability and Statistics*	3	27	18		PHY1107
21	CHE1080	*General Chemistry*	3	42		3	
IV		**Core courses**	**26**				

No.	Code	Subject	Credits	Credit hours			Prerequisite
				Lecture	*Practice*	*Sefl-study*	
22	PHY2300	*Mathematical for Physics*	3	30	15		PHY1108
23	PHY2301	*Mechanics*	4	45	15		
24	PHY2302	*Thermodynamics and Molecular physics*	3	30	15		PHY2301
25	PHY2303	*Electricity and Magnetism*	4	45	15		PHY3202
26	PHY2304	*Optics*	3	30	15		PHY2303
27	PHY3509	*Physics of Matter*	3	30	15		PHY2304
28	PHY2307	*General Physics Practice 1*	2		30		PHY2301
29	PHY2308	*General Physics Practice 2*	2		30		PHY2307
30	PHY2309	*General Physics Practice 3*	2		30		PHY2308
V		**Advanced courses**	**79**				
V.1		*Required*	51				
31	PHY4325	*Introduction to Relativity and Quantum Physics*	3	43		2	PHY2304
32	PHY3501	*Electrics and Electronics*	3	30	15		PHY2303
33	PHY3502	*Computational Physics 1*	3	30	15		INT1005 PHY1108
34	PHY3503	*English for Specific Purposes 1*	2	30			FLF2101
35	PHY3605	*Theoretical mechanics*	4	45	15		PHY2301
36	PHY3606	*Introduction to Electrodynamics*	4	45	15		PHY2303
37	PHY2306	*Quantum Mechanics*	4	45	15		PHY2304
38	PHY3608	*Statistical Mechanics*	4	45	15		PHY3605 PHY3606
39	PHY3505	*Methods of Mathematical Physics*	3	30	15		PHY2300 PHY2304
40	PHY3506	*Experimental methods in Modern Physics*	2	30			PHY2308
41	PHY3507	*Modern Physics Laboratory*	2	15	15		PHY3506

No.	Code	Subject	Credits	Credit hours			Prerequisite
				Lecture	*Practice*	*Sefl-study*	
42	PHY3508	*Computational Physics 2*	3	30	15		PHY3502
43	PHY3510	*Introduction to Astronomy*	3	30	15		PHY2304
44	PHY3525	*Introduction to Nuclear and High Energy Physics*	3	35	10		PHY2305 PHY2306
45	PHY3346	*Solid State Physics*	3	35	10		PHY2306
46	PHY3419	*Physics of the Earth*	3	35	10		PHY2304
47	PHY4073	*Seminar in Research Topics*	2	3	27		
V.2		*Elective*	*15/171*				
48	PHY3329	*Laser Physics and Applications*	3	35	10		PHY2304
49	PHY3422	*Magnetism*	3	35	10		PHY2303
50	PHY3420	*Superconductivity*	3	35	10		PHY2303
51	PHY3347	*Semiconductors physics*	3	35	10		PHY3346
52	PHY3446	*Cryogenic physics*	3	35	10		PHY2302
53	PHY3401	*Optical communication*	3	35	10		PHY2304
54	PHY3512	*Pulse and Digital Modulation*	3	35	10		PHY3501
55	PHY3513	*Group theory*	3	35	10		PHY2306
56	PHY3514	*Introduction to Quantum Field Theory*	3	35	10		PHY2306
57	PHY3515	*Seismology*	3	35	10		PHY2304 INT1005
58	PHY3334	*Solid state physics theory*	3	35	10		PHY3605
59	PHY3517	*Theory of digital signal processing*	3	30	15		PHY3501
60	PHY3432	*Computer Simulation for Physics*	3	30	15		PHY3502
61	PHY3335	*Embedded System*	3	30	15		PHY2302 INT1005
62	PHY3472	*Standard model and its extention*	3	35	10		PHY3514
63	PHY3471	*Cosmology*	3	35	10		PHY3510
64	PHY3355	*Solid State Physics Laboratory*	3		45		PHY3346
65	PHY3356	*Quantum Optics Laboratory*	3		45		PHY2304
66	PHY3357	*Theoretical Physics Laboratory*	3		45		PHY3608

No.	Code	Subject	Credits	Credit hours			Prerequisite
				Lecture	*Practice*	*Sefl-study*	
67	PHY3358	*Low Temperature Physics Laboratory*	3		45		PHY3446
68	PHY3359	*Geophysics Laboratory*	3		45		PHY3419
69	PHY3375	*Modern electronic engineering practice*	3		45		PHY3512 PHY3517
70	PHY3376	*Computational Physics Laboratory*	3		45		INT1005
71	PHY3377	*Computational Materials Science Laboratory*	3		45		PHY3346
72	PHY3378	*High energy physics and cosmology laboratory*	3		45		PHY3471
73	PHY3521	*Theory of Digital Communication*	3	30	15		PHY3501
74	PHY3522	*Microcontrollers*	3	30	15		PHY3501
75	PHY3523	*Electronic Aids to Measurement*	3	35	10		PHY3501
76	PHY3524	*Introduction to General Relativity*	3	35	10		PHY3500
77	PHY3526	*Potential methods applied in Geophysics*	3	35	10		PHY2303
78	PHY3527	*Introduction to quantum theory of Magnetism*	3	35	10		PHY2306
79	PHY3337	*Low dimensional physics*	3	35	10		PHY2306 PHY3608
80	PHY3528	*Quantum Field Theory for Many Bodies*	3	35	10		PHY2306
81	PHY3338	*Theory of elementary particles*	3	35	10		PHY2306
82	PHY3307	*Basic data system*	3	28	14	3	INT1005
83	PHY3380	*Parallel computing*	3	30	12	3	INT1005
84	PHY3351	*Physics of semiconductor devices*	3	35	10		PHY3347
85	PHY3707	*Magnetic measurements*	3	40		5	PHY2303
86	PHY3713	*Optoelectronic and photonics*	3	35	10		PHY2304
87	PHY3388	*Atomic spectroscopy*	3	36		9	PHY2306 PHY3606
88	PHY3390	*Molecular spectroscopy*	3	45			PHY2306

No.	Code	Subject	Credits	Credit hours			Prerequisite
				Lecture	*Practice*	*Sefl-study*	
89	PHY3391	*Experimental optical spectroscopy*	3	40	3	2	PHY2303 PHY2306
90	PHY3333	*Quantum statistical physics*	3	30	15		PHY2306 PHY3608
91	PHY3392	*Introduction of soft materials physics and appications.*	3	36	9		PHY2303
92	PHY3393	*Solid state physics in low temperature.*	3	35	10		PHY2306 PHY3608
93	PHY3394	*Thermodynamics and applications*	3	35	10		PHY2302
94	PHY3448	*Superconductivity and applications*	3	35	10		PHY3420
95	PHY3404	*Geoelectrical Methods*	3	30	10	5	PHY2304
96	PHY3405	*Geomagnetical Methods*	3	30	7	8	PHY2303
97	PHY3406	*Radioactive and Nuclear Geophysics*	3	30	10	5	PHY2304
98	PHY3407	*Logging Geophysics*	3	30	10	5	PHY2304
99	PHY3408	*Geological for Geophysics*	3	30	10	5	PHY2304
100	PHY3423	*Principles and Applications of Ultrasound*	3	30	10	5	PHY3501
101	PHY3424	*Principles and Applications of Digital Communication Techniques*	3	30	10	5	PHY3501
102	PHY3414	*Vibrations*	3	45			PHY3501
103	PHY3710	*Amophous materials*	3	30	15		PHY2303
104	PHY3452	*Magnetic intermetallic materials*	3	45			PHY3422 PHY2306
		Supplement	3/9				
105	PHY3462	*Introduction to nanotechnology*	3	45			PHY3346
106	PHY3461	*Introduction to Materials Science*	3	30	15		PHY2306
107	PHY3530	*Biological Physics*	3	30	15		PHY2303
V.3		***Undergraduate thesis***	*10*				
108	PHY4074	*Thesis*	10				

No.	Code	Subject	Credits	Credit hours			Prerequisite
				Lecture	*Practice*	*Sefl-study*	
		Total	**164**				