*** Materials Science** *(Dated September 30th, 2015)*

Total credits of the curriculum:	**136 credits**
- Basic courses	**28 credits**
(Not including physical education, military defense education, and soft skills)	
- Basic courses:	**6 credits**
- Fundamental courses:	**15 credits**
- Core courses:	**23 credits**
- Advanced courses:	**64 credits**
+ Required:	42 credits
+ Elective:	15 credits
+ Undergraduate thesis/Courses replacing undergraduate thesis:	7 credits

Available curriculum

No.	Code	Subject	Credits	Credit hours			Prerequisite
				Lecture	*Practice*	*Self-study*	
I		**General education knowledge** *(Not including subjects 10- 12)*	**28**				
1	PHI1004	*Fundamental Principles of Marxism - Leninism 1*	2	24	6		
2	PHI1005	*Fundamental Principles of Marxism - Leninism 2*	3	36	9		PHI1004
3	POL1001	*Ho Chi Minh Ideology*	2	20	10		PHI1005
4	HIS1002	*Revolutionary Strategies of Vietnamese Communist Party*	3	42	3		POL1001
5	INT1003	*Introduction to Informatics 1*	2	10	20		
6	INT1005	*Introduction to Informatics 3*	2	12	18		INT1003
7	FLF2101	*General English 1*	4	16	40	4	
8	FLF2102	*General English 2*	5	20	50	5	FLF2101
9	FLF2103	*General English 3*	5	20	50	5	FLF2102
10		*Physical Education*	4				
11		*National Defence Education*	8				
12		*Soft Skills*	3				
II		**Basic courses**	**6**				
13	HIS1056	*Fundamentals of Vietnamese Culture*	3	42	3		
14	GEO1050	*Earth and Life Sciences*	3	30	10	5	
III		**Fundamental courses**	**15**				
15	PHY1106	*Linear Algebra*	3	30	15		
16	PHY1107	*Calculus 1*	3	30	15		
17	PHY1108	*Calculus 2*	3	30	15		PHY1107
18	PHY1109	*Probability and Statistics*	3	30	15		PHY1107
19	CHE1080	*General chemistry*	3	35	10		
IV		**Core courses**	**23**				
20	PHY2300	*Mathematics for Physics*	3	30	15		PHY1108

No.	Code	Subject	Credits	Credit hours			Prerequisite
				Lecture	*Practice*	*Self-study*	
21	PHY2301	*Mechanics*	4	45	15		
22	PHY2302	*Thermodynamics and Molecular physics*	3	30	15		PHY2301
23	PHY2303	*Electricity and Magnetism*	4	45	15		PHY1108
24	PHY2304	*Optics*	3	32	12	1	PHY2303
25	PHY2307	*General Physics Practice 1*	2		30		PHY2301
26	PHY2308	*General Physics Practice 2*	2		30		PHY2307
27	PHY2309	*General Physics Practice 3*	2		30		PHY2308
V		**Advanced courses**	**64**				
V.1		**Required**	**42**				
28	PHY2310	*Nuclear and atomic physics*	3	30	15		PHY2301
29	PHY3301	*Theoretical mechanics*	3	30	15		PHY1108, PHY2301
30	PHY3302	*Introduction to Electrodynamics*	3	30	15		PHY2303
31	PHY2306	*Quantum Mechanics*	4	45	15		PHY2304
32	PHY3303	*Statistical Physics*	3	30	15		PHY1107
35	PHY3340	*Electronics Technology*	4	45	15		PHY2303
34	PHY3167	*Computational Physics*	3	30	15		INT1005, PHY2300
35	PHY3700	*Experimental methods in Materials Science*	3	30	15		PHY2307, PHY2308
36	PHY3341	*Solid State Physics 1*	4	50	10		PHY3303
37	PHY3702	*Low dimensions structure and nanomaterials*	3	30	15		PHY3341
38	PHY3703	*Analysis structure method for materials*	3	30	15		PHY2304 PHY3341
39	PHY3704	*Introduction to Materials Science*	3	40	5		PHY2306

No.	Code	Subject	Credits	Credit hours			Prerequisite
				Lecture	*Practice*	*Self-study*	
40	PHY3437	*Measurement and Signal Processing Technology*	3	40	5		PHY2303
V.2		**Elective**	**15**				
V.2.1		The intensive subjects of Magnetism and Superconductivity	15/24				
41	PHY3706	*Magnetism and magnetic materials*	3	30	15		PHY2303 PHY2306
42	PHY3135	*Thin films physics*	3	45			PHY3341
43	PHY3448	*Superconductivity and Applications*	3	45			PHY3341
44	PHY3707	*Magnetic measurements*	3	40		05	PHY3341
45	PHY3342	*Laboratory in magnetism and Superconductivity*	3		45		PHY3341
46	PHY3446	*Physics and low - temperature technique*	3	30	15		PHY3707 PHY3341
47	PHY3710	*Amorphous materials*	3	30	15		PHY2306
48	PHY3452	*Intermetallic magnetic materials*	3	45			PHY3706
V.2.2		The intensive subjects of Semiconductor Materials	15/30				
49	PHY3347	*Semiconductor Physics*	3	40	5		PHY3341
50	PHY3135	*Thin films physics*	3	45			PHY3341
51	PHY3343	*Laboratory in Semiconductor Physics*	3		45		PHY3341
52	PHY3712	*Semiconductor Device and Energy Conversion*	3	45			PHY3347
53	PHY3353	*Optical Processes in Semiconductors*	3	40	5		PHY3347
54	PHY3351	*Semiconductor Device Physics*	3	35	5	5	PHY3347
55	PHY3713	*Optoelectronics*	3	45			PHY3704
56	PHY3465	*Sensors and applications*	3	45			PHY3704
57	PHY3722	*Semiconductor Device for Energy Conversion*	3	45			PHY3747

No.	Code	Subject	Credits	Credit hours			Prerequisite
				Lecture	*Practice*	*Self-study*	
58	PHY3529	*Spectroscopy Structure*	3	35	10		PHY2306
V.2.3		The intensive subjects of Calculation of Materials Science	15/24				
59	PHY3344	*Computational Materials Science*	3	30	15		PHY3341 PHY2306
60	PHY3135	*Thin films physics*	3	45			PHY3341
61	PHY3345	*Solid State Physics 2*	4	45	15		PHY3341 PHY2306
62	PHY3354	*Laboratory in Computational Materials Science*	3		45		PHY3341 PHY3167
63	PHY3313	*Advanced Programming*	3	30	15		PHY3167
64	PHY3505	*Mathematical- Physical method*	3	30	15		PHY3167
65	PHY3718	*Monte Carlo Method*	2	20	10		PHY3167
66	PHY3527	*Introduction to Quantum Theory of Magnetism*	3	35	10		PHY2306
V.3		**Graduation Thesis**	7				
67	PHY4090	*Graduation Thesis*	**7**				
		Courses replacing thesis	***7***				
68	PHY3720	*Modern Physics*	4	40	20		PHY2304 PHY2310
69	PHY3509	*Physics of Matter*	3	45			PHY2306
		Total	**136**				