

*** Biotechnology (Dated September 30th, 2015)**

Total credits of the curriculum:	138 credits
- General education knowledge:	28 credits
- Basic courses:	6 credits
- Fundamental courses:	28 credits
- Core courses:	34 credits
+ <i>Required:</i>	<i>28 credits</i>
+ <i>Elective:</i>	<i>6/21 credits</i>
- Advanced courses:	42 credits
+ <i>Required:</i>	<i>21 credits</i>
+ <i>Elective:</i>	<i>12 credits</i>
+ <i>Internship and graduate knowledge:</i>	<i>9 credits</i>

Available curriculum

No.	Code	Subject	Credits	Credit hours			Prerequisite
				Lecture	Practice	Self-study	
I		General education knowledge <i>(Not including subjects 10 -12)</i>	28				
1	PHI1004	<i>Fundamental Principles of Marxism - Leninism 1</i>	2	24	6		
2	PHI1005	<i>Fundamental Principles of Marxism - Leninism 2</i>	3	36	9		PHI1004
3	POL1001	<i>Ho Chi Minh Ideology</i>	2	20	10		PHI1005
4	HIS1002	<i>The Revolutionary Line of the Communist Party of Vietnam</i>	3	42	3		POL1001
5	INT1003	<i>Introduction to Informatic 1</i>	2	10	20		
6	INT1005	<i>Introduction to Informatic 3</i>	2	12	18		INT1003
7	FLF2101	<i>General English 1</i>	4	16	40	4	
8	FLF2102	<i>General English 2</i>	5	20	50	5	FLF2101
9	FLF2103	<i>General English 3</i>	5	20	50	5	FLF2102
10		<i>Physical Education</i>	4				
11		<i>National Defence Education 1</i>	8				
12		<i>Soft Skills</i>	3				
II		Basic courses	6				
13	HIS1056	<i>Fundamentals of the Vietnamese Culture</i>	3	42	3		
14	GEO1050	<i>Earth and Life Sciences</i>	3	30	10	5	
III		Fundamental courses	28				
15	MAT1090	<i>Linear Algebra</i>	3	30	15		
16	MAT1091	<i>Calculus 1</i>	3	30	15		
17	MAT1192	<i>Calculus 2</i>	2	20	10		MAT1091
18	MAT1101	<i>Probability and Statistics</i>	3	27	18		MAT1091
19	PHY1100	<i>Mechanics – Thermodynamics</i>	3	30	15		MAT1091
20	PHY1103	<i>Electromagnetism - Optics</i>	3	30	15		MAT1091
21	CHE1080	<i>General Chemistry</i>	3	42		3	

No.	Code	Subject	Credits	Credit hours			Prerequisite
				Lecture	Practice	Self-study	
22	CHE1081	<i>Organic Chemistry</i>	3	42		3	CHE1080
23	CHE1057	<i>Analytic Chemistry</i>	3	42		3	CHE1080
24	CHE1069	<i>General chemistry Lab</i>	2		30		
IV		Core courses	34				
IV.1		Required	28				
25	BIO2043	<i>English in Biology</i>	2	20	10		FLF2102
26	BIO2401	<i>Cell Biology</i>	3	25	15	5	
27	BIO2202	<i>Biochemistry</i>	3	25	15	5	CHE1080
28	BIO2203	<i>Genetics</i>	3	27	15	3	BIO2401
29	BIO2201	<i>Molecular Biology</i>	3	25	15	5	BIO2401
30	BIO2204	<i>Microbiology</i>	3	27	15	3	BIO2202
31	BIO2205	<i>Biostatistics</i>	3	15	30		MAT1192 MAT1101
32	BIO2206	<i>Human and Animal Physiology</i>	3	25	15	5	BIO2401
33	BIO2207	<i>Developmental Biology</i>	3	25	15	5	BIO2401
34	BIO2208	<i>Tropical Ecology and Conservation</i>	2	5	25		BIO3305, BIO3307
IV.2		Elective	6/21				
35	BIO2210	<i>Biophysics</i>	3	25	15	5	PHY1100, PHY1103, BIO2401
36	BIO2212	<i>Proteomics and Structural Biology</i>	3	40		5	BIO2201, BIO2202
37	BIO2215	<i>Molecular Immunology</i>	3	27	15	3	BIO2204
38	BIO2216	<i>Basic virology</i>	3	35	5	5	BIO2201, BIO2215

No.	Code	Subject	Credits	Credit hours			Prerequisite
				Lecture	Practice	Self-study	
39	BIO2217	<i>Biotech factory trip</i>	3	10		35	BIO2203, BIO2204
40	BIO3204	<i>Human Biology</i>	3	25	15	5	BIO2401
41	BIO3205	<i>Basic Ecology</i>	3	25	15	5	BIO2401
V		Advanced courses	42				
V.1		Required	21				
42	BIO3300	General technic in biotechnology	3	27	15	3	BIO2204
43	BIO3301	<i>Bioinformatics</i>	3	20	20	5	BIO2202, BIO2201
44	BIO3302	<i>Introduction to Biotechnology</i>	3	25	15	5	BIO2201, BIO2203
45	BIO3303	<i>Functional Biology of Plants</i>	3	27	15	3	BIO2401
46	BIO3304	<i>Genetic Engineering</i>	3	27	15	3	BIO2203, BIO2204
47	BIO3305	Plant systematics	2	20	7	3	BIO2401
48	BIO3306	Invertebrates systematics	2	20	7	3	BIO2401
49	BIO3307	Vertebrates systematics	2	20	7	3	BIO2401
V.2.		Elective	12				
V.2.1		Intensive subjects	9				
		<i>The intensive subjects in Genetics and genetic engineering</i>	9/15				
50	BIO3314	<i>Microbial Genetics</i>	3	30	10	5	BIO2203, BIO2204
51	BIO3309	<i>Protein Enzyme Technology</i>	3	30	10	5	BIO2202
52	BIO3328	<i>Population Genetics</i>	3	40		5	BIO2203
53	BIO3311	<i>Cancer Genetics</i>	3	30	10	5	BIO2401 BIO2202
54	BIO3312	<i>Pharmaceutical biotechnology</i>	3	27	15	3	BIO2203
			9/15				

No.	Code	Subject	Credits	Credit hours			Prerequisite
				Lecture	Practice	Self-study	
55	BIO3313	<i>Microbiology and Environmental Remediation</i>	3	30	10	5	BIO2204
56	BIO3314	<i>Microbial Genetics</i>	3	30	10	5	BIO2203, BIO2204
57	BIO3315	<i>Vaccine Biotechnology</i>	3	30	10	5	BIO2201, BIO2204
58	BIO3316	<i>Food Microbiology</i>	3	30	10	5	BIO2204
59	BIO3317	<i>Microbial Enzymes</i>	3	30	10	5	BIO2204
		<i>The intensive subjects in Biochemistry and protein-enzyme technology</i>	9/12				
60	BIO3318	<i>Biochemistry of Food Processing</i>	3	30	10	5	BIO2202, BIO2204
61	BIO3309	<i>Protein Enzyme Technology</i>	3	30	10	5	BIO2202
62	BIO3320	<i>Plant Cell and Tissue Technology</i>	3	40		5	BIO2201, BIO3303
63	BIO3210	<i>Biochemistry of Bioactive Compounds</i>	3	30	10	5	BIO2204
		<i>The intensive subjects in Cell Technology</i>	9/12				
64	BIO3217	<i>Plant Cell and Tissue Technology</i>	3	40		5	BIO2201, BIO3303
65	BIO3325	<i>Animal Biotechnology</i>	3	25	15	5	BIO2201
66	BIO3326	<i>Stem Cell Technology</i>	3	20	20	5	BIO2201
67	BIO3327	<i>Tumor Biology</i>	3	25	15	5	BIO2201
		<i>The intensive subjects in Medicinal Biology</i>	9/24				
68	BIO3329	<i>Molecular Basis of Diseases</i>	3	40		5	BIO2204
69	BIO3330	<i>Medical Microbiology</i>	3	40		5	BIO2401 BIO2202
70	BIO3331	<i>Medical Animal</i>	3	40		5	BIO3306
71	BIO3327	<i>Tumor Biology</i>	3	24	15	6	BIO2201
72	BIO3332	<i>General Epigenetics</i>	3	27	15	3	BIO2201 BIO2203

No.	Code	Subject	Credits	Credit hours			Prerequisite
				Lecture	Practice	Self-study	
73	BIO3249	<i>Basic Neurobiology</i>	3	30	10	5	BIO2401 BIO2202
74	BIO3220	<i>Basic Endocrinology</i>	3	30	10	5	BIO2206
75	BIO3222	<i>Human Molecular Biology</i>	3	25	15	5	BIO2201 BIO
		<i>The intensive subjects in Biodiversity and conservation biology</i>	9/36				
76	BIO3239	<i>Morphological evolution of angiosperm</i>	3	30	10	5	BIO3305
77	BIO3240	<i>Ecological bases of plants</i>	3	30	10	5	BIO3305
78	BIO3225	<i>Botanical Nomenclature</i>	3	30	10	5	BIO3305
79	BIO3228	<i>General Entomology</i>	3	30	10	5	BIO3306
80	BIO3241	<i>General Hydrobiology</i>	3	30	10	5	BIO3306
81	BIO3172	<i>Invertebrate Medicine</i>	3	30	10	5	BIO3306
82	BIO3230	<i>Biogeography</i>	3	30	10	5	BIO3307
83	BIO3232	<i>Fisheries Biology</i>	3	30	10	5	BIO3307
84	BIO3231	<i>Biology and Ecology of Vertebrates</i>	3	40		5	BIO3307
85	BIO3233	<i>Ecosystem Management</i>	3	30	10	5	BIO3307
86	BIO3339	<i>Environment and Sustainable Development</i>	3	30	10	5	BIO3234
87	BIO3234	<i>Environmental Ecology</i>	3	40		5	BIO3307
V.2.2		Supplement	3/18				
88	BIO3237	<i>Evolutionary Biology</i>	3	30	10	5	BIO2203
89	BIO3150	<i>Experimental Ecology</i>	3	30	10	5	
90	BIO3226	<i>Plant Research Methods</i>	3	30	10	5	BIO3305
91	BIO3227	<i>Principles of Conservation Biology</i>	3	30	10	5	BIO3305, BIO3307
92	BIO3244	<i>General Parasites</i>	3	30	10	5	BIO3306
93	BIO3238	<i>Management of Reserves and Wild</i>	3	30	10	5	BIO3307

No.	Code	Subject	Credits	Credit hours			Prerequisite
				Lecture	Practice	Self-study	
		<i>Animal Protection</i>					
V.3		Internship and Undergraduate thesis	9				
94	BIO4072	<i>Annual Essay</i>	2		15	15	
95	BIO4073	<i>Graduation thesis or final examination</i>	7				
		<i>Courses replacing undergraduate thesis</i>	7/14				
96	BIO3098	<i>Cells and Organisms</i>	3	30	10	5	BIO2401
97	BIO3099	<i>Organisms and Population</i>	3	30	10	5	BIO2401
98	BIO3245	<i>Genetic Markers and Individual Identity</i>	2	15	10	5	BIO2401 BIO2201
99	BIO3246	<i>Physiological bases of Microbiology</i>	2	15	10	5	BIO2204
100	BIO3017	<i>Bioenergy</i>	2	15	10	5	BIO2202
101	BIO2001	<i>Histology</i>	2	15	10	5	BIO2401
		Total	138				