

**\* Chemical Engineering and Technology** (*Honor Program*)

<b>Total credits of the curriculum:</b>	<b>155 credits</b>
<b>- General education knowledge:</b>	<b>33 credits</b>
<i>(Not including physical education, military defense education and soft skills)</i>	
<b>- Basic courses:</b>	<b>06 credits</b>
<b>- Fundamental courses:</b>	<b>28 credits</b>
<b>- Core courses:</b>	<b>40 credits</b>
+ <i>Required:</i>	<i>30 credits</i>
+ <i>Elective:</i>	<i>10/17 credits</i>
<b>- Advanced courses:</b>	<b>48 credits</b>
+ <i>Required:</i>	<i>28 credits</i>
+ <i>Elective:</i>	<i>10/68 credits</i>
+ <i>Undergraduate thesis/ Courses replacing thesis:</i>	<i>10 credits</i>

## Available curriculum

No.	Code	Subject	Credits	Credit hours			Prerequisite
				Lecture	Practice	Self-study	
<b>I</b>		<b>General education knowledge</b> (Not including subjects 11-13)	<b>33</b>				
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 Informatic 1	2	10	20		
6	INT1005	Introduction to Informatic 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	FLF2104	General English 4	5	20	50	5	FLF2103
11		Physical Education	4				
12		National Defence Education	8				
13		Complementary skills	3				
<b>II</b>		<b>Basic courses</b>	<b>6</b>				
14	HIS1056	Fundamentals of Vietnamese Culture	3	42	3		
15	GEO1050	Earth and Life Sciences	3	30	10	5	
<b>III</b>		<b>Fundamental courses</b>	<b>28</b>				
16	MAT1090	Linear Algebra	3	30	15		
17	MAT1091	Calculus 1	3	30	15		
18	MAT1092	Calculus 2	3	30	15		MAT1091
19	MAT1101	Probability and Statistics	3	27	18		MAT1091
20	PHY1100	Mechanics - Thermodynamics	3	30	15		MAT1091

No.	Code	Subject	Credits	Credit hours			Prerequisite
				Lecture	Practice	Self-study	
21	PHY1103	Electromagnetism - Optics	3	30	15		MAT1091
22	CHE1051	Accelerated chemistry 1	3	42		3	
23	CHE1052	<b>Accelerated chemistry 2</b>	3	42		3	
24	CHE1046	Accelerated chemistry Lab	2		30		CHE1052
25	CHE1099	<b>English for specific purpose- Chem</b>	2	25	5		FLF2101
<b>IV</b>		<b>Core courses</b>	<b>40/47</b>				
<b>IV.1</b>		<b>Required</b>	<b>30</b>				
26	CHE1077	<b>Inorganic chemistry 1</b>	3	40		5	CHE1052
27	CHE1054	Inorganic chemistry Lab 1	2		30		CHE1052
28	CHE1055	Organic chemistry 1	4	56		4	CHE1052
29	CHE1191	Organic chemistry Lab 1	2		30		CHE1052
30	CHE1082	<b>Analytical chemistry</b>	3	42		3	CHE1052
31	CHE1058	Analytical chemistry Lab	2		30		CHE1052
32	CHE2018	Physical chemistry (*)	4	56		4	CHE1051
33	CHE2019	Physical chemistry Lab	2		30		CHE1052
34	CHE1091	Technical Chemistry (*)	3	42		3	CHE1052
35	CHE1062	Technical Chemistry Lab	2		30		CHE1091
36	CHE1065	<b>Material chemistry (*)</b>	3	42		3	CHE1052
<b>IV.2</b>		<b>Elective</b>	<b>10/17</b>				
37	CHE1086	Instrumental characterization	3	42		3	CHE1052
38	CHE1087	Instrumental characterization Lab	2		30		CHE1052
39	CHE1067	Chemistry of polymers	2	28		2	CHE1052
40	CHE1048	Colloid chemistry	2	28		2	CHE1052
41	CHE1075	Fundamental of biochemistry	3	42		3	CHE1052
42	CHE1078	Physical and physicochemical methods of chemical systems	3	42		3	CHE1052
43	CHE1089	Physical and physicochemical methods of chemical systems Lab			30		CHE1052

No.	Code	Subject	Credits	Credit hours			Prerequisite
				Lecture	Practice	Self-study	
			2				
<b>V</b>		<b>Advanced courses</b>	<b>48/106</b>				
<b>V.1</b>		<b>Required</b>	<b>28</b>				
44	CHE3282	Scientific Seminar (***)	2	30			
45	CHE2021	Hydraulic pneumatic	2	28		2	CHE1091
46	CHE3251	<b>Chemical reaction engineering</b>	3	42		3	CHE1091
47	CHE3252	Thermodynamic engineering	3	42		3	CHE1052
48	CHE3253	Heat and mass transfer	3	42		3	CHE1091
49	CHE3254	Seperation technology	3	42		3	CHE1091
50	CHE3255	Chemical Engeneering Lab	2		30		CHE1062
51	CHE1079	<b>Environmental chemistry</b>	3	42		3	CHE1052
52	CHE3045	<b>Petroleum chemistry (*)</b>	3	42		3	CHE1052
53	CHE2010	Industrial Practice (*)	2		30		CHE1046
54	CHE3101	Research project 1 (***)	2		25	5	CHE1046
<b>V.2</b>		<b>Elective</b>	<b>10/68</b>				
55	CHE3071	Modeling and Optimization in chemical engineering processes	2	28		2	CHE1091
56	CHE3256	Simulation in chemical technology	2	28		2	CHE1091
57	CHE3257	Designing chemical technology equipment	2	28		2	CHE1091
58	CHE3073	Computational chemical technology	2	28		2	CHE1091
59	CHE3258	Technical drawing	3	42		3	CHE1091
60	CHE3259	<b>Chemical kinetics engineering</b>	3	42		3	CHE1091
61	CHE3260	Inorganic chemical technology	3	42		3	CHE1091
62	CHE3261	Organic chemical technology	3	42		3	CHE1091
63	CHE3198	Environmental chemistry Lab	2		30		CHE1079

No.	Code	Subject	Credits	Credit hours			Prerequisite
				Lecture	Practice	Self-study	
64	CHE3262	<b>Toxicology</b>	2	28		2	CHE1079
65	CHE3037	Environmental analysis	2	28		2	CHE1079
66	CHE3036	Management and treatment of solid waste	2	28		2	CHE1079
67	CHE3263	<b>Water and wastewater treatment</b>	2	28		2	CHE1079
68	CHE3264	Exhaust gas treatment	2	28		2	CHE1079
69	CHE3199	Applied biological methods in environmental technology	2	28		2	CHE1079
70	CHE3046	<b>Petroleum refining technology</b>	2	28		2	CHE3045
71	CHE3047	Petrochemical technology	2	28		2	CHE3045
72	CHE3265	Natural and petroleum gas technology	2	28		2	CHE3045
73	CHE3200	Petrochemistry Lab	2		30		CHE3045
74	CHE3266	<b>Catalysis in petroleum refining and petrochemical industry</b>	2	28		2	CHE3045
75	CHE3051	Petroleum producing and gas fuel technology	2	28		2	CHE3045
76	CHE3054	Safety and environmental protection in the petroleum industry	2	28		2	CHE3045
77	CHE3055	Hydrogen technology to handle petroleum products	2	28		2	CHE3045
78	CHE3050	Petroleum products	2	28		2	CHE3045
79	CHE3267	Synthesis of materials	2	28		2	CHE1065
80	CHE3284	Methodological materials	2	28		2	CHE1065
81	CHE3268	Polymer and composite materials technology	2	28		2	CHE1065
82	CHE3269	<b>Membrane materials technology</b>	2	28		2	CHE1065

No.	Code	Subject	Credits	Credit hours			Prerequisite
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83	CHE3270	Nano and nanocomposite materials technology	2	28		2	CHE1065
84	CHE3276	Electrochemical and electroplating technology	2	28		2	CHE1052
85	CHE3027	<b>Corrosion and metal protection</b>	2	28		2	CHE1052
86	CHE3060	Biochemical technology	2	28		2	CHE1075
V.3		<b>Undegraduate thesis/ Courses replacing thesis</b>	<b>10/20</b>				
87	CHE4051	Undergraduate thesis (**)	10		130	20	
		<i>Courses replacing thesis</i>	10				
88		Select extra 10 credits from the courses in V.2 as an alternative to the undergraduate thesis					
		<b>Total</b>	<b>155</b>				

