

Appendix 2: Contributions of courses to the ILOs of the programme

Contributions of courses to the ILOs of Chemical Engineering Programme

No.	Course Name	Credits	ECTS*	Intended Learning Outcomes						
				ILO1	ILO2	ILO3	ILO4	ILO5	ILO6	ILO7
				I. GENERAL KNOWLEDGE (65 credits/ 101.82 ECTS)						
1	Philosophy of Marxism and Leninism	3	4.64		L		H			
2	Political economics of Marxism and Leninism	2	3.09		L		H			
3	Scientific socialism	2	3.09		L		H			
4	History of Vietnamese Communist Party	2	3.09		L		H			
5	Ho Chi Minh's Thoughts	2	3.09		L		H			
6	Critical Thinking	3	4.64	L		M		M		H
7	Engineering Ethics and Professional Skills	3	4.64		H			H		H
8	<i>Physical Training 1</i>	0	0.00	-	-	-	-	-	-	-
9	<i>Physical Training 2</i>	0	0.00	-	-	-	-	-	-	-
10	<i>Military education</i>	0	0.00	-	-	-	-	-	-	-
11	Writing AE1	2	3.09			H				
12	Listening AE1	2	3.09			H				
13	Writing AE2	2	3.09			H				
14	Speaking AE2	2	3.09			H				
15	Calculus 1	4	6.18	H				M		
16	Calculus 2	4	6.18	H				M		
17	Physics 1	2	3.09	H	H				H	
18	Physics 2 - Thermodynamic	2	3.09	H	H				H	
19	Chemistry for Engineers	3	4.64	L						
20	Biology	3	4.64	L				L		L
	Practice in Biology	1	2.00	L				M		M

No.	Course Name	Credits	ECTS*	Intended Learning Outcomes						
				ILO1	ILO2	ILO3	ILO4	ILO5	ILO6	ILO7
21	Engineering Drawing	3	4.64		L			M		L
22	Applied Statistic	3	4.64	L	M		L	L		M
23	Principles of EE1	3	4.64	L				M		
24	Applied Mechanics	2	3.09	L			H			
25	Applied Fluid Mechanics	2	3.09	M				M		
	Applied Fluid Mechanics Lab	1	2.00	M			L			
26	Programming for Engineers	3	4.64	L				M		
	Programming for Engineers Lab	1	2.00	L			M	M		
27	Economy – Management	3	4.64							
	<i>Entrepreneurship</i>	3	4.64	L	M		H			M
	<i>Engineering Project Management</i>	3	4.64		H		H			H
	<i>Project Management</i>	3	4.64		H		H			H
II. CORE MAJOR KNOWLEDGE (36 credits/ 58.82 ECTS)										
28	Introduction to Chemical Engineering	2	3.09	M	L	L			L	L
29	Inorganic Chemistry	3	4.64	H	L				L	M
	Inorganic Chemistry Lab	1	2.00	L			L	M		L
30	Organic Chemistry 1	3	4.64	L					M	
31	Organic Chemistry 2	3	4.64	L					M	
32	Organic Chemistry Laboratory	0	4.00	L				L	M	L
33	Analytical Chemistry 1	3	4.64	M		M				M
34	Analytical Chemistry 2	3	4.64	M		M			M	M
35	Analytical Chemistry Laboratory	1	4.00	M		M	M	M	M	M
36	Physical Chemistry 1	3	4.64	H		M			M	L
37	Physical Chemistry 2	2	3.09	L						H
	Physical Chemistry 2 Lab	0	2.00	M	L		M	M		M

No.	Course Name	Credits	ECTS*	Intended Learning Outcomes						
				ILO1	ILO2	ILO3	ILO4	ILO5	ILO6	ILO7
38	Biochemistry	3	4.64	L		M	M		M	M
	Biochemistry Lab	1	2.00	L	L	M	M	M	M	
39	Process Instrumentation and Control	2	3.09	H				H		M
40	Industrial Chemistry	2	3.09	H	H				H	H
III. SPECIALIZATION KNOWLEDGE (31 credits/ 49.27 ECTS)										
41	Reaction Kinetics and Catalysis	3	4.64	H	H				H	H
42	Computational Chemistry	2	3.09	M				M	M	
	Computational chemistry lab	1	2.00	M		M	M	M	M	M
43	Simulation and Optimization	2	3.09	L				H	H	M
	Simulation And Optimization Lab	1	2.00	L					H	M
44	Mass Transfer Operations	3	4.64	H		M			M	L
45	Heat Transfer Operations	3	4.64	H		M			M	L
46	Chemical Reaction Engineering	3	4.64	H				M		H
47	Mechanical Unit Operations	3	4.64	H		M			M	L
48	Introduction to Health Safety and Environment	1	2.00	H	M				H	M
ELECTIVES COURSES (take at least 03 courses)										
49	<i>Elective A (min 3 credits)</i>									
	<i>Green Chemical Engineering</i>	3	4.64	H	H				H	H
	<i>Nanomaterials</i>	3	4.64	L			H		L	
	<i>Biomaterials</i>	3	4.64	L					M	L
	<i>Organic Chemistry Synthesis</i>	3	4.64	L					H	M
	<i>Advanced Engineering Drawing</i>	2	3.09	M				H		M
	<i>Advanced engineering drawing lab</i>	1	2.00	M				H		M
50	<i>Elective B (min 3 credits)</i>									
	<i>Environmental Chemistry 1</i>	3	4.64	L		M		M		L

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				ILO1	ILO2	ILO3	ILO4	ILO5	ILO6	ILO7
	<i>Environmental Chemistry 2</i>	3	4.64	M			L			L
	<i>Heterogeneous Catalysis</i>	3	4.64	H	H				H	M
	<i>Methods For Natural Products And Drugs</i>	2	3.09	L					H	M
	<i>Methods For Natural Products And Drugs Lab</i>	1	2.00	L				H	M	M
	<i>Pipping and Instruments System Design</i>	3	4.64	H	H			H		M
51	<i>Elective C (min 3 credits)</i>									
	<i>Sustainable Energy</i>	3	4.64	M	H			M		H
	<i>Natural Gas Processing</i>	3	4.64	H	H				H	M
	<i>Bioinorganic Chemistry</i>	3	4.64	L	M	M				M
	<i>Corrosion Chemistry</i>	3	4.64	L						L
	<i>Medicinal Chemistry</i>	3	4.64	H		H	H		H	M
	<i>Treatment Plant Operation</i>	3	4.64	H	H		H	H		H
IV. PROFESSIONAL PRACTICE AND RESEARCH (19 credits/ 36.64 ECTS)										
52	Research Methodology	3	4.64	L		M	M			H
53	Research 1	1	2.00	L		M			M	M
54	Research 2	1	2.00	L		M-H			M-H	M
55	Internship	2	4.00		H	H	H	M		H
56	Thesis	12	24.00	H	H	H		H	H	H

* Note: Classification of the course's contribution: L (Low); M (Medium); H (High)