

No	Code	Courses	SKS	PLO												
				BC-1	BC-2	BC-3	BC-4	BC-5	BC-6	BC-7	BC-8	BC-9	BC-10	BC-11	BC-12	
85	KI525	Selected Topic in Biological Chemistry	3			X										
86	KI527	Waste and Water Treatment Experiments	2				X			X					X	
87	KI526	Biological Chemistry Research Techniques	2			X										
88	KI528	Food Processing and Technology Experiments	2				X			X					X	
89	KI529	Material Synthesis and Characterization	3			X										
90	KI530	Environmental Chemistry Seminar	2							X	X	X				
91	KI531	Food Chemistry Seminar	2							X	X	X				
92	KI532	Material Chemistry Seminar	2							X	X	X				
93	KI533	Biological Chemistry Seminar	2							X	X	X				
MKPPL																
94	KI590	Working Practice Interval (Internship)	4	X	X	X	X	X	X	X	X	X	X	X	X	X
Jumlah SKS			147													

3. Mapping Between PLOs with courses in Bachelor of Chemistry Education

No	Code	Courses	SKS	PLO														
				BCE -1	BCE -2	BCE -3	BCE -4	BCE -5	BCE -6	BCE -7	BCE -8	BCE -9	BCE -10	BCE -11	BCE -12	BCE -13	BCE -14	
MKU																		
1	KU100	Islamic Education	2														X	X
2	KU101	Protestant Christianity Education	2														X	X
3	KU102	Catholic Education	2														X	X
4	KU103	Hinduism Education	2														X	X
5	KU104	Buddhism Education	2														X	X
6	KU109	Confucianism Education	2														X	X
7	KU105	Civic Education	2															X
8	KU106	Indonesian Language	2												X			
9	KU108	Sports Education	2															X
10	KU110	Pancasila Education	2															X
11	KU119	Art Education	2															X
12	KU300	Islamic Education Seminar	2															X
13	KU301	Protestant Christianity Education Seminar	2															X
14	KU302	Catholic Education Seminar	2															X
15	KU303	Hinduism Education Seminar	2															X
16	KU304	Buddhism Education Seminar	2															X
17	KU309	Confucianism Education Seminar	2															X
18	KU400	Community Service	2														X	
MKDK																		
19	DK300	Fundamentals of Education	2						X				X					

No	Code	Courses	SKS	PLO													
				BCE -1	BCE -2	BCE -3	BCE -4	BCE -5	BCE -6	BCE -7	BCE -8	BCE -9	BCE -10	BCE -11	BCE -12	BCE -13	BCE -14
20	DK301	Psychology of Education and Counseling	2						X				X				
21	DK303	Curriculum and Learning	2						X				X				
22	DK304	Education Management	2						X				X				
MKKF				Fundamentals of Education													
23	MA100	STEM	3	X									X				
24	MA200	STEM Application	3	X									X				
MKPBS																	
25	KI326	Chemistry Learning Strategy	3							X			X				
26	KI327	Chemistry Learning Evaluation	3							X			X				
27	KI328	Chemistry Learning Media and ICT Literation	3							X			X				
28	KI329	Chemistry Learning Planning	3							X			X				
MKKIPS																	
29	KI100	Mathematics for Chemistry	2	X									X				
30	KI101	Fundamentals of Chemistry 1	3										X				
31	KI102	Fundamentals of Chemistry 2	3										X				
32	KI200	English	2										X	X			
33	KI201	Entrepreneurship	2										X			X	
34	KI202	Basic Laboratory Skills	2				X						X				
35	KI203	Fundamental Chemistry Experiments	2				X						X				
36	KI301	School Chemistry 1	3							X			X				
37	KI302	School Chemistry 2	3							X			X				

No	Code	Courses	SKS	PLO													
				BCE -1	BCE -2	BCE -3	BCE -4	BCE -5	BCE -6	BCE -7	BCE -8	BCE -9	BCE -10	BCE -11	BCE -12	BCE -13	BCE -14
38	KI303	Chemical Structure and Bonding	3		X								X				
39	KI304	Gas, Thermodynamics and Phase Equilibrium	3		X								X				
40	KI305	Fundamentals of Analytical Chemistry	3		X								X				
41	KI306	Structure and Reactivity of Monofunctional Organic Compounds	4		X								X				
42	KI307	Structure and Reactivity of Inorganic Compounds	3		X								X				
43	KI308	Structure and Function of Biomolecule	3		X								X				
44	KI309	Chemical Kinetics	2		X								X				
45	KI310	Separation Chemistry	2		X								X				
46	KI311	Structure and Reactivity of Polyfunctional Organic Compounds	2		X								X				
47	KI312	Chemistry of Transition and Main Groups Elements	3		X								X				
48	KI313	Biomolecule Metabolism and Genetic Information	2		X								X				
49	KI314	Thermodynamics of Multi-components System	2		X								X				
50	KI316	Coordination Chemistry	3		X								X				
51	KI336	Statistics for Chemistry Education Research	2									X	X	X			
52	KI338	Chemistry Education Research Methodology	3									X	X	X			
53	KI401	Multimedia Programming	2										X				
54	KI405	Physical Chemistry Experiment	2				X						X				

No	Code	Courses	SKS	PLO													
				BCE -1	BCE -2	BCE -3	BCE -4	BCE -5	BCE -6	BCE -7	BCE -8	BCE -9	BCE -10	BCE -11	BCE -12	BCE -13	BCE -14
55	KI406	Fundamental Analytical Chemistry Experiment	2				X						X				
56	KI407	Identification and Purification of Organic Compounds Experiments	2				X	X					X				
57	KI408	Inorganic Chemistry Experiments	2				X	X					X				
58	KI409	Biochemistry Experiments	2				X	X					X				
59	KI410	Chemical Separation and Measurement Experiments	2			X							X				
60	KI411	Synthesis and Isolation of Organic Compounds Experiments	2				X	X					X				
61	KI501	Chemistry Learning Simulation	3							X			X				
62	KI503	Instrumental Analytical Chemistry	3		X								X				
63	KI598	Thesis	6	X	X	X	X	X	X	X	X	X	X	X	X	X	X
64	KI599	Defense Exam	0	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MKKPPS																	
65	KI319	Introduction to Environmental Chemistry	2			X							X				
66	KI320	Introduction to Food Chemistry	2			X							X				
67	KI321	Introduction to Material Chemistry	2			X							X				
68	KI322	Introduction to Biological Chemistry	2			X							X				
69	KI323	Nuclear Chemistry and Radiochemistry	2			X							X				
70	KI325	Chemical Industry Process	2			X							X				
71	KI330	Philosophy of Science and History of Chemistry	2	X									X				

No	Code	Courses	SKS	PLO														
				BCE -1	BCE -2	BCE -3	BCE -4	BCE -5	BCE -6	BCE -7	BCE -8	BCE -9	BCE -10	BCE -11	BCE -12	BCE -13	BCE -14	
72	KI331	School Chemistry Laboratory Management	2				X							X				
73	KI332	Junior and Senior High School Chemistry Learning and Curriculum	2								X			X				
74	KI334	Management of School Chemistry Teaching Material	2								X			X				
75	KI335	Training Management in Chemistry Education	2											X				
76	KI402	School Chemistry Experiment	2				X							X				
77	KI403	Production of Web Based Chemistry Teaching Material	2								X			X				
78	KI404	Production of Chemistry Learning Videos	2											X				
79	KI502	Development of School Chemistry Experiments	2				X	X						X				
MKPPLSP																		
80	KI590	Working Practice Interval	4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Jumlah SKS			150															

4. Mapping Between PLOs with courses in Bachelor of Physics Education

No	Code	Courses	SKS	LO													
				BPE-1	BPE-2	BPE-3	BPE-4	BPE-5	BPE-6	BPE-7	BPE-8	BPE-9	BPE-10	BPE-11	BPE-12	BPE-13	
MKU																	
1	KU100	Islamic Education	2													X	X
2	KU101	Protestant Christianity Education	2													X	X
3	KU102	Catholic Christianity Education	2													X	X
4	KU103	Hinduism Education	2													X	X
5	KU104	Buddhism Education	2													X	X
6	KU109	Confucianism Education	2													X	X
7	KU105	Civic Education	2													X	X
8	KU106	Indonesian Language	2													X	X
9	KU110	Pancasila Education	2													X	X
10	KU108	Physical Education and Sport	2													X	X
11	KU119	Art Education	2													X	X
12	KU300	Islamic Education Seminar	2													X	X
13	KU301	Protestant Christianity Education Seminar	2													X	X
14	KU302	Catholic Christianity Education Seminar	2													X	X
15	KU303	Hinduism Education Seminar	2													X	X
16	KU304	Buddhism Education Seminar	2													X	X
17	KU309	Confucianism Education Seminar	2													X	X
18	KU400	Community Service	2													X	X
MKDK																	
19	DK300	Fundamentals of Education	2						X		X	X					
20	DK301	Psychology of Education and Counselling	2						X		X	X					
21	DK303	Curriculum and Learning	2						X		X	X					
22	DK304	Management of Education	2						X		X	X					
MKKF																	

No	Code	Courses	SKS	LO												
				BPE-1	BPE-2	BPE-3	BPE-4	BPE-5	BPE-6	BPE-7	BPE-8	BPE-9	BPE-10	BPE-11	BPE-12	BPE-13
45	FI254	School Physics Laboratory	2		X	X	X									X
46	FI351	Electromagnetism and Modern Physics for School	2	X	X							X				X
47	FI352	Electromagnetism	4	X	X							X				X
48	FI353	Modern Physics	4		X							X				
49	FI552	Seminar of Physics Education	3			X	X	X		X	X	X				X
50	FI553	Research Methodology of Physics Education	3				X	X	X	X	X	X				X
51	FI554	Nuclear Physics	3	X	X											
52	FI371	Entrepreneurship	2	X												X
53	FI571	Quantum Physics	3		X											X
54	FI572	Statistical Physics	3		X							X				X
55	FI573	Solid State Physics	3		X							X				X
56	FI598	Thesis	6	X	X	X	X	X	X	X	X	X	X	X	X	X
57	FI599	Thesis Defence	0	X	X	X	X	X	X	X	X	X	X	X	X	X
MKKPPS																
58	FI133	Physics for Elementary School	2		X				X			X				X
59	FI338	Environmental Physics	2		X											X
60	FI339	Taxonomy of Physics Education	2			X				X	X					X
61	FI431	Technology and Engineering in Physics Education	2			X				X	X					X
62	FI432	E-Learning in Physics Education	2			X				X	X					X
63	FI433	ICT in Physics Learning	2			X				X	X					X
64	FI434	Applied Statistics for Education	2	X												X
65	FI435	Applied Electronics	2		X											X
66	FI436	Computational Physics	2	X												
67	FI531	Item Response Theory	2	X		X						X				X
68	FI354	Innovation of Physics Teaching Material	2			X						X				X

No	Code	Courses	SKS	LO													
				BPE-1	BPE-2	BPE-3	BPE-4	BPE-5	BPE-6	BPE-7	BPE-8	BPE-9	BPE-10	BPE-11	BPE-12	BPE-13	
69	FI355	History of Physics	2		X												
70	FI451	Wave and Electromagnetism Experiments *)	2		X		X									X	
71	FI452	Electronic Instrumentation and Measurement Technique	2		X							X				X	
72	FI574	Physics Education for Sustainable Development	2		X				X			X				X	
73	FI471	Management of School Physics Laboratory *)	2			X										X	
74	FI472	Experiments on Modern Physics	2	X	X		X			X						X	
75	FI575	Advance Nuclear Physics	2	X	X							X					
76	FI576	Advance Quantum Physics	2	X	X							X					
77	FI577	Advance Solid-State Physics	2		X												
78	FI578	Astrophysics	2		X							X				X	
MKPPL																	
79	FI590	Teaching Practice In School	4	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Jumlah SKS			146														

5. Mapping Between PLOs with courses in Master of Chemistry

No	Code	Courses	SKS	PLO								
				MC-1	MC-2	MC-3	MC-4	MC-5	MC-6	MC-7	MC-8	
MKKPs												
1	PS701	Applied Statistics	3			X						
2	PS702	Philosophy of Science	2					X	X			
3	PS709	Chemistry Research Methodology	3				X	X	X	X		
MKKIPS												
4	KI707	Selected Topics in Physical Chemistry	2	X								
5	KI711	Selected Topics in Organic Chemistry	2	X								
6	KI712	Selected Topics in Analytical Chemistry	2	X								
7	KI713	Selected Topics in Inorganic Chemistry	2	X								
8	KI723	Selected Topics in Biochemistry	2	X								
9	KI724	Computational Chemistry	2		X	X						
10	KI725	Characterization and Measurement in Chemistry	2	X								
11	KI799	Thesis	8			X	X				X	
MKKPPS												
12	KI726	Material Design and Process	2	X	X							
13	KI727	Polymer Material	2	X	X							
14	KI728	Composite and Ceramic Materials	3	X	X							
15	KI729	Material Synthesis and Characterization	3	X	X							
16	KI730	Material Chemistry Research Study	2	X	X		X					X
17	KI731	Functional Food Components	2	X	X							
18	KI732	Drug Molecule Synthesis	2	X	X							
19	KI733	Molecular Mechanism and Drug Biotransformation	2	X	X							

No	Code	Courses	SKS	PLO								
				MC-1	MC-2	MC-3	MC-4	MC-5	MC-6	MC-7	MC-8	
20	KI734	Medical and Nutritional Biochemistry	2	X	X							
21	KI735	Biological Chemistry Research Study	2	X	X			X				X
22	KI736	Food and Drug Analysis	2	X	X							
Jumlah SKS			42									