Universitas Pertamina

COURSES LIST

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FACULTY OF PLANNING AND INFRASTRUCTURE

ENVIRONMENTAL ENGINEERING COURSES

SEMESTER – 1

No	Code	Subject	Credit
1	UP1104	Calculus I	4
2	UP1105	Basic Physics I	4
3	CH1101	Basic Chemistry I	3
4	UP1103	English I	2
5	EV1101	Introduction to Environmental Engineering and Climate Change	3
6	UP1102	Academic Writing	2
7	UP1101	Critical Thinking	1
		Total	19

1st Year

SEMESTER – 2

No	Code	Subject	Credit
8	UP1201	Calculus II	2
9	UP1203	English II	4
10	UP1202	Physics II	4
11	CH1202	Chemistry II	3
12	UP0013	Introduction to Business and Energy Technology	2
13	UP1204	Creative Problem Solving	2
		Total	17

1st Year

SEMESTER – 3

No	Code	Subject	Credit
14	EV2101	Probability and Statistics	3
15	UP2101	Engineering Mathematics	3
16	EV2101	Environmental Chemistry	3
17	EV2102	Environmental Microbiology	2
18	EV2103	Environmental Statistics	3
19	EV2104	Fluid Mechanics 1	3
20	EV2105	Engineering Drawing	3
21	GL2004	Introduction to Geographic Information Systems	2
		Total	20

2nd Year

SEMESTER – 4

No	Code	Subject	Credit
22	EV2201	Hydrology	3
23	EV2202	Environmental Health Toxicology	2
24	EV2203	Fluid Mechanics II	3
25	EV2204	Environmental Laboratory	3
26	EV2205	Unit Process	2
27	EV2206	Unit Operation	2
28	EV2207	Solid Waste Management	3
29	CV2121	Introduction to Structure Engineering	2
		Total	20

2nd Year

SEMESTER – 5

No	Code	Subject	Credit
30	EV3101	Soil and Groundwater Pollution	3
31	EV3102	Environmental Management System	2
32	EV3103	Introduction to Environmental Modelling	2
33	EV3104	Water Supply System	3
34	EV3105	Drainage and Sewerage	3
35	EV3106	Air Pollution	3
36	EV3107	Hazardous Materials and Waste Management	2
37	EV3108	Energy and Environment	2
		Total	20

3rd Year

SEMESTER – 6

No	Code	Subject	Credit
38	EV3201	Water Treatment Plant Design	3
39	EV3202	Wastewater Treatment Plant Design	3
40	EV3203	Solid Waste Treatment	2
41	EV3204	Air Quality Control	2
42	EV3205	Environmental Biotechnology	2
43	EV3206	Project Management	2
44	EV3207	Environmental Law and Policy	2
45	UP0011	Religion and Ethics	2
		Total	18

3rd Year

SEMESTER – 7

No	Code	Subject	Credit
46	EV4101	Capstone Design on Environmental based Project	3
47	EV0001	Internship	2
48	EV4103	Industrial Waste Management	2
49	EV4104	Health and Safety Environment	3
50	CO4001	Career Preparation and Professional Ethic	2
51	EV4105	Environmental Impact Assessment (amdal)	3
52	UP0012	Pancasila and Civic Education	2
		Total	17

4th Year

SEMESTER – 8

No	Code	Subject	Credit
53	EV0002	Final Project (Undergraduate Thesis)	5
54		Elective Course 1	2
55		Elective Course 2	2
56		Elective Course 3	2
57		Elective Course 4	2
58		Elective Course 5	2
		Total	15

4th Year

ELECTIVE COURSES

No	Code	Subject	Credit
59	EV4221	Marine Pollution Control	2
60	EV4122	Surface Water Quality Monitoring	2
61	EV4223	Industrial Wastewater Treament	2
62	EV4231	Recycling Technology	2
63	EV4132	Waste to Energy	2
64	EV4233	Sludge Treatment	2
65	EV4134	Atmospheric Behaviour and Analysis	2
66	EV4235	Air Pollution Monitoring	2
67	EV4241	Occupational Safety and Health Risk Analysis	2
68	EV4142	Environmental Valuation	2
69	EV4243	Cleaner Production	2

Availability to be confirmed

70	EV4251	Environmental Conservation and Management	2
71	EV4152	System Analysis and Environmental Modelling	2
72	EV4253	Green Building	2
73	EV4154	Plumbing Systems and Pumps	
74	MN3102	Enterpreunership	
75	CO4002	Public Engagement in Scientific and Engineering Project	
76	EV4261	Introduction to Environmental Impact Assessment	
77	EV4062	Introduction to Environmental Science	
78	EV4063	Occupational Safety and Health, and Environmental Protection	2

CIVIL ENGINEERING COURSES

SEMESTER – 1

1st Year

No	Code	Subject	Credit
1	UP1104	Calculus I	4
2	UP1105	Basic Physics I	4
3	CH1101	Basic Chemistry I	3
4	UP1103	English I	2
5	CV1101	Introduction to Infrastructure	3
6	UP1102	Academic Writing	2
7	UP1101	Critical Thinking	1
		Total	19

SEMESTER – 2

1st Year

No	Code	Subject	Credit
8	UP1201	Calculus II	2
9	UP1203	English II	4
10	UP1202	Physics II	4
11	CH1202	Chemistry II	3
12	UP0013	Introduction to Business and Energy Technology	2
13	UP1204	Creative Problem Solving	2
		Total	17

SEMESTER – 3

2nd Year

No	Code	Subject	Credit
14	CV2107	Introduction to Transportation Systems	2
15	CV2101	Statics	3
16	CV2102	Engineering Materials	3
17	CV2103	Fluid Mechanics	2
18	CV2104	Statistic and Probabilistic	2
19	CV2105	Computer Programming and Application	2
20	CV2106	Engineering Drawing	2
21	UP2102	Engineering Mathematics 1	3
		Total	19

SEMESTER – 4

No	Code	Subject	Credit
22	CV2201	Hydraulics	2
23	CV2202	Soil Mechanics 1	3
24	CV2203	Mechanics of Materials	3
25	CV2204	Hydrology	3
26	CV2205	Ocean Wave Mechanics	3
27	CV2206	Introduction to Surveying and Mapping	2
28	UP2201	Engineering Mathematics 2	3
		Total	19

2nd Year

SEMESTER – 5

No	Code	Subject	Credit
29	CV3101	Structural Analysis 1	3
30	CV3102	Soil Mechanics 2	3
31	CV3103	Structural Steel Buildings	3
32	CV3104	Numerical Method	2
33	CV3105	Road Engineering	3
34	CV3106	Hydrodynamics	2
35	CV3107	Construction Management	2
		Total	18

3rd Year

SEMESTER – 6

No	Code	Subject	Credit
36	CV3201	Structural Analysis 2	3
37	CV3202	Foundation Engineering	3
38	CV3203	Structural Concrete Buildings	3
39	CV3204	Structural Dynamics	3
40	CV3205	Engineering Infrastructure Inter-Mode	3
41	CV3206	Ocean Wave Stochastic	2
		Total	17

3rd Year

SEMESTER – 7

No	Code	Subject	Credit
42	CV4102	Earthquake Resistant Structure Engineering	3
43	CV4103	Method and Technology of Construction	3
44	CV0011	Internship	2
45	UP0011	Religion and Ethics	2

4th Year

46		Elective Course 1	
47		Elective Course 2	
48		Elective Course 3	
		Total	19

SEMESTER – 8

4th Year

No	Code	Subject	Credit
49	CV4202	Engineering Economics	2
50	CV4201	Final Project	5
51	EV4602	Introduction to Environmental Science	2
52		Elective Course	3
53	CO0011	Ethics Profession and Working Preparation	2
54	UP0012	Civic and Citizenship	2
		Total	16

ELECTIVE COURSES

Availability to be confirmed

No	Code	Subject	Credit
55	CV4001	Finite Element Method	2
56	CV4002	Desain of Offshore Structure	3
57	CV4003	Subsea Pipeline	3
58	CV4004	Disasters and Infrastructure Failure	2
59	CV4005	Transport Demand Analysis	3
60	CV4006	Coastal Process and Structures	3
65	CV4007	Energy conversion of water resources	2
66	CV4008	Structural Building Engineering and Design	3
67	CV4009	Prestressed Concrete	3
68	CV4010	Design of Offshore Floating Structures	3
		Total	27

FACULTY OF INDUSTRIAL TECHNOLOGY

ELECTRICAL ENGINEERING COURSES

SEMESTER - 1

No	Code	Subject	Credit
1	CH1101	Basic Chemistry I	3
2	CS0012	Introduction to Information Technology - Algorithm	2
3	UP1104	Calculus I	4
4	UP1105	Physics I	4
5	UP1103	English I	2
6	UP1102	Academic Writing	
		Total	18

1st Year

SEMESTER – 2

No	Code	Subject	Credit
8	EE2116	Measurement and Electrical Circuit I	3
9	EE2111	Introduction to Electrical Engineering	3
10	UP1202	Physics II	4
11	CH1201	Chemistry II	3
12	UP1203	English II	2
13	UP0013	Introduction to Technology and Business Energy	2
14	ME0012	Engineering Drawing	1
		Total	18

1st Year

SEMESTER – 3

No	Code	Subject	Credit
15	EE2211	Introduction to Electrical Engineering	2
16	EE2112	Electromagnetic	3
17	EE2114	Discrete Mathematics	3
18	EE2115	Linear System	3
19	UP210	Engineering Mathematics I	3
20	EE2113	Telecommunication System	3
21	EE2116	Measurement and Electrical Circuit I	2
		Total	19

2nd Year

SEMESTER – 4

No	Code	Subject	Credit
22	EE2211	Probability and Statistics	2
23	EE2212	Digital Circuit + Laboratory Practices	4
24	EE2213	Electronic Circuit I	3
25	EE2214	Basic Control System + Laboratory Practices	4
26	EE2215	Measurement and Electrical Circuit II + Laboratory Practice	3
27	EE2201	Engineering Mathematics II	3
		Total	19

2nd Year

SEMESTER – 5

No	Code	Subject	Credit
28	EE3111	Electronic Circuit II + Laboratory Practices	4
29	EE3112	Basic Energy Conversion + Laboratory Practices	4
30	EE3115	Numerical Method	3
31	EE3113	Digital Signal Processing	4
32	EE3114	Microprosessor + Laboratory Practices	4
		Total	19

3rd Year

SEMESTER – 6

No	Code	Subject	Credit
33	EE3011	Internship	2
34	EE3211	Electrical Machines + Laboratory Practices	4
35	EE3212	Otomation Engineering	2
36	EE3213	Electrical Material Engineering	2
37	EE3214	Power System Analysis + Laboratory Practices	3
38	EE3215	Power Electronics	3
39	EE3216	Engineering Optimization	2
		Total	18

3rd Year

SEMESTER – 7

No	Code	Subject	Credit
40	EE4111	Intelligent Control System	3
41	EE4112	Electrical Machine Drive	3
42	Ee4011	Integrated System Design	

43	EE00XX	Elective Course 1	3	4th Year
44	EE00XX	Elective Course 2	3	
45	CO0011	Professional Ethics	2	
		Total	14	

SEMESTER – 8

No	Code	Subject	Credit	
46	EE4211	Project Management and Occupational Health and Safety	2	4th Year
47	EE4012	Bachelor Thesis I	5	
		Total	7	

ELECTIVE COURSES – POWER SYSTEM ENGINEERING

No	Code	Subject	Credit	
48	EE0021	Renewable Energy	2	
49	EE0022	Power System Protection	2	
50	EE0023	Power System Planning and Maintenance	2	
51	EE0024	Optimum Operation of Power System	2	
52	EE0025	Power System Design	2	
53	EE0026	High Voltage Direct Current Transmission	2	
54	EE0027	Energy Storage System	2	*Availability to be confirmed*
55	EE0028	Electrical Power Quality	2	
56	EE0029	Electrical Installation System	2	
57	EE0041	High Voltage Engineering	3	
58	EE0042	Power Stability and Reliability	3	
59	EE0043	Power Transmission and Distribution	3	
60	EE0044	Design of Electrical Machine	2	
61	EE0045	Electrical Vehicle	2	
62	EE0046	Thermodynamics	2	
63	EE0047	Power Generation	3	
64	EE0048	Management and Energy Conservation	2	

ELECTIVE COURSES – CONTROL SYSTEM ENGINEERING

No	Code	Subject	Credit	
65	EE0031	System Modelling	2	
66	EE0032	System Identification	2	
67	EE0033	Adaptive Control System	2	
68	EE0034	Predictive Control System	2	
69	EE0035	Digital Control System	3	
70	EE0036	Optimal Control System	3	
71	EE0037	Mechatronics	2	
72	EE0038	Sensors and Actuators	2	
73	EE0039	Process Control System	2	
74	EE0051	Modern Control System	3	
75	EE0052	Hydraulic and Pneumatic System	2	*Availability to be confirmed*
76	EE0053	Robotics	2	
77	EE0054	Real Time Control System	2	
78	EE0055	Multivariable Control System	3	
79	EE0056	Industrial Informatics	2	
80	EE0057	Digital Image Processing	2	
81	EE0048	Stocastic Process	2	

CHEMICAL ENGINEERING COURSES

SEMESTER – 1

1st Year

No	Code	Subject	Credit
1	UP0013	Introduction to Technology and Business of Energy	2
2	UP1103	English I	2
3	UP1102	Academic Writings	2
4	UP1101	Critical Thinking	1
5	UP1105	Physics I	4
6	UP1104	Calculus I	4
7	CH1101	Chemistry I	3
		Total	18

SEMESTER – 2

1st Year

No	Code	Subject	Credit
8	UP1201	Calculus II	2
9	UP1203	English II	4
10	UP1202	Physics II	4
11	CH1202	Chemistry II	3
12	CE1201	Introduction to Chemical Engineering	2
13	UP1204	Creative Problem Solving	2
		Total	17

SEMESTER – 3

2nd Year

No	Code	Subject	Credit
14	UP0011	Religion and Ethics	2
15	UP0012	Ideology and Civics	2
16	CE2105	Introduction to Information Technology and Algorithm	2
17	CE2101	Analytical Chemistry	3
18	CE2102	Physical Chemistry	3
19	CE2103	Mass and Energy Balance	3
20	UP2101	Engineering Mathematics I	3
21	CE2104	Thermodynamics 1	3
		Total	21

SEMESTER – 4

2nd Year

No	Code	Subject	Credit
22	CE2201	Statistics and Probabilistic	2
23	CE2202	Organic Chemistry	3
24	CE2203	Process Engineering Drawing	2
25	UP2102	Engineering Mathematics II	3
26	CE2204	Thermodynamics II	3
27	CE2205	Materials and Corrosion Science	2
28	CE2206	Occupational Health and Safety and Environment	2
29	CE2207	Transport Phenomena	3
		Total	20

SEMESTER – 5

3rd Year

No	Code	Subject	Credit
30	CE3101	Chemical Reaction Engineering I	3
31	CE3102	Chemical Engineering Laboratory I	1
32	CE3103	Separation Processes	3
33	CE3104	Process Heat Transfer	3
34	CE3105	Chemical Engineering Fluid Mechanics	3
35	CE3106	Chemical Engineering Economics	2
36	CE3107	Industrial Microbiology	2
37	CE3108	Numerical and Computational Methods in Chemical Engineering	3
		Total	20

SEMESTER – 6

3rd Year

No	Code	Subject	Credit
38	CE3201	Chemical Reaction Engineering II	3
39	CE3202	Chemical Engineering Laboratory II	1
40	CE3203	Process Control in Chemical Industry	3
41	CE3204	Chemical Industry Equipment Design	4
42	CE3205	Process Synthesis and Simulation	3
43	CE3206	Chemical Plant Utility Systems	2
44	CE3207	Research Methodology and Seminar	2
45	CE3208	Chemical Engineering Project Management	2
		Total	20

SEMESTER – 7

No	Code	Subject	Credit
46		Elective Course	3
47	CE4101	Internship	2
48	CE4102	Petrochemical Process	2
49	CE4103	Chemical Plant Design	4
50	CE4104	Petroleum Refining	2
51	CE4105	Surface Operation and Production of Hydrocarbon	3
		Total	17

4th Year

SEMESTER – 8

No	Code	Subject	Credit
53	CO0011	Career Preparation and Professional Ethics	2
54	CE402X	Elective Course 1	3
55	CE402X	Elective Course 2	3
56	CE4201	Final Project	4
		Total	12

4th Year

ELECTIVE COURSES

No	Code	Subject	Credit
59	CE4021	Clean and Renewable Energy	3
60	CE4022	Biochemical and Bioprocess Engineering	3
61	CE4023	Fermentation and Enzymatic Engineering	3
62	CE4024	Nanomaterial Technology	3
63	CE4025	Electrochemistry and Applications	3
64	CE4026	Advanced Catalysis	3
65	CE4027	Membrane Technology	3
66	CE4028	Industrial Risk Management	3
67	CE4029	Industrial Waste Management	3
68	CE4030	Combustion Technology	3
		Total	30

Availability to be confirmed

LOGISTICS ENGINEERING COURSES

SEMESTER – 1

1st Year

No	Code	Subject	Credit
1	UP0013	Introduction to Business and Energy Technology	2
2	UP1103	English 1	2
3	UP1102	Academic Writing	2
4	UP1104	Calculus I	4
5	UP1105	Physics I	4
6	CH1102	Chemistry I	3
7	UP1101	Critical Thinking	1
		Total	18

SEMESTER – 2

1st Year

No	Code	Subject	Credit
8	UP1204	English II	2
9	UP1201	Calculus II	4
10	UP1202	Physics II	4
11	LG1201	Probability and Statistics	3
12	CH1202	Chemistry II	3
13	UP1205	Creative Thinking	2
		Total	18

SEMESTER – 3

2nd Year

No	Code	Subject	Credit
14	LG2101	Introduction to Logistics Engineering	2
15	LG2102	Operational Research I	3
16	LG2103	Logistics Planning and Control	3
17	LG2104	Materials Science	2
18	LG2105	Statistics in Logistics	3
19	UP2101	Engineering Mathematics	3
20	UP0011	Religion and Ethics	2
21	CS0012	Introduction to Information Technology and Algorithm	3
		Total	21

SEMESTER – 4

2nd Year

No	Code	Subject	Credit
22	LG2201	Warehouse System	2
23	LG2202	Inventory System	3
24	LG2203	Analysis and Estimation of Logistics Costs (ANEBIL)	2
25	LG2204	Packaging in logistics	2
26	LG2205	Operation Research II	3
27	LG2206	Third Party Logistics	2
28	LG2207	Health, Safety, Security and Environment	2
29	ME0011	Engineering Drawing	2
		Total	18

SEMESTER – 5

3rd Year

No	Code	Subject	Credit
30	LG3101	Procurement System	3
31	LG3102	Transportation and Distribution System	3
32	LG3103	Material Handling	2
33	LG3104	Logistics Facility Design	3
34	LG3105	Organizational Management for Logistics	2
35	LG3106	Logistic Infrastructure	2
36	LG3107	System Modelling	3
37	UP0012	Pancasila and Citizenship	2
		Total	20

SEMESTER – 6

3rd Year

No	Code	Subject	Credit
38	LG3201	Maritime Logistics	3
39	LG3202	Engineering Economics	2
40	LG3203	Design of Logistics Information Systems	3
41	LG3204	Simulation of Logistics System	3
42	LG3205	Logistics System Design I	3
43	LG3206	Project Management	2
44	LG3207	Supply Chain Management	3
45	LG4201	Legal Aspects in Logistics	2
		Total	22

SEMESTER – 7

No	Code	Subject	Credit
46	LG4101	Seminar of Logistics Engineering Profession	2
47	LG4102	Research Methodology	2
48	LG4103	Logistics System Design II	3
49	LG4104	Logistics Quality	3
50	LG0001	Internship	2
51	CO4001	Career Preparation and Professional Ethics	2
		Total	14

4th Year

SEMESTER – 8

No	Code	Subject	Credit
52		Elective Course 1	3
53		Elective Course 2	3
54		Elective Course 3	3
55	LG0002	Bachelor's Thesis	5
		Total	14

4th Year

ELECTIVE COURSES

No	Code	Subject	Credit
		Logistics Optimization	
54	LG0003	Revenue Management	3
55	LG0004	Logistics Risk Management	3
56	LG0005	Urban Logistics	3
57	LG0006	Metaheuristic	3
58	LG0007	Data Mining	3
		Operational Logistics	
59	LG0009	Sustainable Logistics	3
60	LG0010	Technology-Based Entrepreneurship	3
61	LG0011	Maintenance of Facilities and Logistics Equipment	3
62	LG0012	Port Management and Operations	3
63	LG0013	Oil and Gas Logistics	3
64	LG0014	Global Logistics	3
		Total	33

Availability to be confirmed

MECHANICAL ENGINEERING COURSES

SEMESTER – 1

1st Year

No	Code	Subject	Credit
1	ME1101	Engineering Drawing	3
2	UP1103	English 1	2
3	UP1102	Academic Writing	2
4	UP1104	Calculus I	4
5	UP1105	Physics I	4
6	CH1102	Chemistry I	3
7	UP1101	Critical Thinking	1
		Total	19

SEMESTER – 2

1st Year

No	Code	Subject	Credit
8	UP1204	English II	2
9	UP1201	Calculus II	4
10	UP1202	Physics II	4
11	CH1202	Chemistry II	3
12	UP0013	Introduction to	2
13	UP1205	Creative Thinking	2
		Total	17

SEMESTER – 3

2nd Year

No	Code	Subject	Credit
14	ME2101	Probability and Statistics	3
15	UP2101	Engineering Mathematics	3
16	ME2102	Thermodynamics I	3
17	ME2103	Engineering Materials	2
18	ME2104	Kinematics and Dynamics	4
19	ME2105	Statics	3
		Total	18

SEMESTER – 4

2nd

No	Code	Subject	Credit
20	ME2201	Material Strength and Mechanics	3
21	ME2202	Fluid Mechanics 1	3
22	ME2203	Thermodynamics II	3
23	ME2204	Mechanical Drawing	3

24	EV0262	Introduction to Environment	2	Year
25	ME0001	Measurement and Industrial Metrology	2	
		Total	18	

SEMESTER – 5

No	Code	Subject	Credit	
26	ME3101	Heat Transfer	3	3rd Year
27	ME3102	Machine Element I	3	
28	ME3103	Motor Generator (lab work)	3	
29	ME3104	Manufacturing Processes I (Lab work)	3	
30	ME3105	Mechanical Vibration	2	
31	ME3106	Fluid Mechanics II	2	
32	ME3101	Numerical Method (Lab Work)	3	
		Total	19	

SEMESTER – 6

No	Code	Subject	Credit	
33	ME3201	Machine Element II	3	3rd Year
34	ME3202	Energy Conversion Machine	3	
35	ME3203	Manufacturing Process II	3	
36	ME3204	System Dynamics and Control	3	
37	ME0002	Rotating Equipment	3	
		Total	15	

SEMESTER – 7

No	Code	Subject	Credit	
38	UP0011	Religion and Ethics	2	4th Year
39	ME3201	Engineering Economics	3	
40	ME3202	Maintenance Management and Engineering	3	
41	ME3203	Mechanical Design Project	3	
42	ME3204	Mechatronics	3	
43	ME0002	Health and Safety at Work	3	
		Total	17	

SEMESTER – 8

No	Code	Subject	Credit
44	ME4201	Thesis	5
45	UP0012	Civics	2
46	CO0011	Professional Ethics	2
47	ME0005	Health and Safety at Work	2
48	ME0006	Project Management	2
		Total	13

4th Year

ELECTIVE COURSES

No	Code	Subject	Credit
49	ME4021	Energy Audit and Management	2
50	ME4024	Energy Storage Technology	2
51	ME4205	Internal Combustion Engine	2
52	ME4022	Solar Energy Engineering	2
53	ME4023	Wind & Hydro Energy Engineering	2
54	ME4034	Metal Joining (Welding)	2
55	ME4033	Corrosion and its prevention	2
56	ME4031	Physical Metallurgy	2
57	ME4032	Finite Element Method	2
58	ME4051	Introduction to Nanoscience and Nanotechnology	2
59	ME4042	Product Design and Development	2
60	ME4041	Reverse Engineering	2
61	ME4035	Manufacturing Management	2
62	ME4051	Risk Management and Analysis	2
63	ME4024	Oil and Gas Production System	2

Availability to be confirmed

FACULTY OF INDUSTRIAL TECHNOLOGY

GEOPHYSICAL ENGINEERING COURSES

SEMESTER – 1

1st Year

No	Code	Subject	Credit
1	UP0013	Introduction to Technology and Business of Energy	2
2	UP1103	English I	2
3	UP1102	Academic Writings	2
4	UP1101	Critical Thinking	1
5	UP1105	Physics I	4
6	UP1104	Calculus I	4
7	CH1101	Chemistry I	3
		Total	18

SEMESTER – 2

1st Year

No	Code	Subject	Credit
8	UP1201	Calculus II	4
9	UP1203	English II	2
10	UP1202	Physics II	4
11	CH1202	Chemistry II	3
12	GL1201	Physical Geology	3
13	UP1204	Creative Problem Solving	2
		Total	18

SEMESTER – 3

2nd Year

No	Code	Subject	Credit
14	UP2101	Engineering Mathematics I	3
15	GP2101	Introduction to Geophysics	2
16	GP2102	Waves in Geophysics	2
17	GP2103`	Computing Methods	3
18	GL2001	Sedimentology and Stratigraphy	3
19	GL2002	Petrology and Mineralogy	3
20	GL2109	Introduction to Exploration and Energy Poduction	2
		Total	18

SEMESTER – 4

No	Code	Subject	Credit
21	UP2102	Engineering Mathematics II	3
22	GP2201	Potential Theory	2
23	GP2202	Numerical Method	3
24	GP2203	Electronics & Geophysical Instrumentation	2
25	GP2204	Seismic Refraction	3
26	GP2205	Seismology	3
27	GL2209	Structural Geology	3
		Total	19

2nd Year

SEMESTER – 5

No	Code	Subject	Credit
28	GP3101	Geophysics Signal Analysis	3
29	GP3102	Geodynamics	2
30	GP3103	Geoelectrical and Electromagnetics	3
31	GP3104	Acquisition & Processing of Seismic reflection Data	4
32	GP3105	Gravity and Magnetic Method	3
33	GP3106	Geomatics in Geophysics	2
34	GL3101	Petroleum Geology for Geophysics	3
		Total	20

3rd Year

SEMESTER – 6

No	Code	Subject	Credit
35	GP3201	Science and Geothermal Technology	3
36	GP3202	Inversion Theory	3
37	GP3203	Geophysical Field Camp	3
38	GP3204	Interpretation of Seismic Reflection Data	3
39	GP3205	Geophysical Project Management	2
40	GP3206	Geostatistics	3
41	GL3202	Formation Evaluation	3
		Total	20

3rd Year

SEMESTER – 7

No	Code	Subject	Credit
42	GP4101	Seismic Inversion and Atribute	3
43	GP4102	Geophysics Engineering and Environment	2
44	GP4103	Integrated Exploration and Field Development	3
45	GP4104	Scientific Writing and Presentation Techniques	2
46	UP0011	Religion and Ethics	2
48	UP0012	Pancasila and Civic Education	2
49		Elective Course 1	2
50		Elective Course 2	2
51		Elective Course 3	2
		Total	20

4th Year

SEMESTER – 8

No	Code	Subject	Credit
52	GP4202	Senior's Final Project	5
53	CO4001	Preparation for Entering the World of Work & Professional Ethics	2
54		Elective Course 1	2
55		Elective Course 2	2
		Total	11

4th Year

ELECTIVE COURSES

No	Code	Subject	Credit
56	GP4111	Geophysical Method in Geothermal Field Development	2
57	GP4211	Geothermal Engineering	2
58	GP4112	Rock Physics	2
59	GP4212	Seismic stratigraphy	2
60	GP4113	Geotomography	2
61	GP3012	Natural Disaster Mitigation	2
62	GP3212	Mining Geophysics	2
63	GP4114	Capita Selecta	2
64	GP3211	Internship	2
65	GP4213	Borehole Geophysics	2
66	CO4002	Public Engagement in the Science and Technology Project	2

Availability to be confirmed

67	GP4014	Reservoir Geophysics	2
68	GP3111	Introduction to Geophysical Exploration	2
69	GP3213	Layanan II - Geostatistics and Computation	2
70	GP3112	Introduction to Seismic Method	2
		Total	30

GEOLOGICAL ENGINEERING COURSES

SEMESTER – 1

1st Year

No	Code	Subject	Credit
1	UP0013	Introduction to Technology and Business of Energy	2
2	UP1103	English I	2
3	UP1102	Academic Writings	2
4	UP1101	Critical Thinking	1
5	UP1105	Physics I	4
6	UP1104	Calculus I	4
7	CH1101	Chemistry I	3
		Total	18

SEMESTER – 2

1st Year

No	Code	Subject	Credit
8	UP1201	Calculus II	4
9	UP1203	English II	2
10	UP1202	Physics II	4
11	CH1202	Chemistry II	3
12	GL1201	Physical Geology	3
13	UP1204	Creative Problem Solving	2
		Total	18

SEMESTER – 3

2nd Year

No	Code	Subject	Credit
14	GL2101	General Geochemistry	2
15	GL2102	Sedimentology and Stratigraphy	4
16	GL2103	Paleontology	3
17	GL2104	Crystallography and Mineralogy	2
18	GL2105	Volcanology	2
19	GL2107	Geographic Information System	3
20	GL2109	Introduction to Energy Exploration and Production	2
21	UP0011	Religion and Ethics	2
		Total	20

SEMESTER – 4

2nd Year

No	Code	Subject	Credit
22	GL2202	Advanced stratigraphy	2
23	GL2203	Petrology	3
24	GL2204	Geothermal Geology	2
25	GL2205	Marine Geology	2
26	GL2206	Hydrogeology	2
27	GL2208	Writing and Scientific Presentation Techniques	2
28	GL2209	Structural Geology	3
29	GL2210	Micropaleontology and Biostratigraphy	3
		Total	19

SEMESTER – 5

3rd Year

No	Code	Subject	Credit
28	GL3101	Petroleum Geology	3
29	GL3102	Geodynamics	2
30	GL3103	Petrography and optical mineralogy	3
31	GL3105	Geomorphology	3
32	GL3106	Historical Geology	2
33	GP3111	Introduction to Geophysical Exploration	2
34	GP3112	Introduction to the Seismic Method	2
35		Elective Course	2
		Total	19

SEMESTER – 6

3rd Year

No	Code	Subject	Credit
36	GL3201	Geological Seismic Interpretation	3
37	GL3202	Formation Evaluation	2
38	GL3204	Field Geology	4
39	GL3205	Geology of Indonesia	2
40	GL3206	Genesis of Economic Minerals	2
41	GL3207	Engineering geology	3
42	GP3106	Geo-statistics	2
43	UP0012	Pancasila and Citizenship	2
		Total	20

SEMESTER – 7

No	Code	Subject	Credit
44	GL4101	Non-conventional Oil and Gas and Renewable Energy	2
45	GL4102	Exploration Geology	3
46	GL4103	Environmental Geology	2
48	GL4104	Energy and Mineral Regulations and Laws	2
49	GL4105	Energy Management and Economy	2
50	GL4106	Integrated Exploration and Field Development Project	3
51	GL4107	Independent Mapping	2
52		Elective Course	4
		Total	20

4th Year

SEMESTER – 8

No	Code	Subject	Credit
53	GL4201	Bachelor Thesis	5
54	GL4202	Internship	2
55		Elective Course	3
		Total	10

4th Year

ELECTIVE COURSES

No	Code	Subject	Credit
56	GL2108	Geotourism	2
57	GL3108	Carbonate Sedimentation	2
58	GL3104	Coal Geology	2
59	GL3111	Hydrothermal processes and Mineral Alteration	2
60	GL4109	Basin analysis	2
61	GL4108	Geomechanics and Geopressure	2
62	GL4115	Geothermal Hydrology	2
63	GL3101	Geological Hazard Mitigation	2
64	Gl3209	Petroleum Geochemistry	2
65	GL3210	Remote Sensing	2
66	Gl4113	Advanced structural geology	2
67	Gl31076	Geothermal Geochemistry	2
		Total	24

Availability to be confirmed

PETROLEUM ENGINEERING COURSES

SEMESTER – 1

No	Code	Subject	Credit
1	UP0013	Introduction to Technology and Business of Energy	2
2	UP1103	English I	2
3	UP1102	Academic Writings	2
4	UP1101	Critical Thinking	1
5	UP1105	Physics I	4
6	UP1104	Calculus I	4
7	CH1101	Chemistry I	3
		Total	18

1st Year

SEMESTER – 2

No	Code	Subject	Credit
8	UP1201	Calculus II	4
9	UP1203	English II	2
10	UP1202	Physics II	4
11	CH1202	Chemistry II	3
12	GL1201	Physical Geology	3
13	UP1204	Creative Problem Solving	2
		Total	18

1st Year

SEMESTER – 3

No	Code	Subject	Credit
14	CE2105	Thermodynamics	3
15	PE 2101	Petrophysics + Practices	3
16	PE 2102	Reservoir Fluids + Practice	3
17	PE 2103	Probability and Statistics	2
18	PE2104	Introduction of Information Technology and Algorithms	2
19	PE 2105	Oil and Gas Economy and Management	2
20	GL2101	Sedimentology and Stratigraphy Principles	3
21	GL2109	Introduction to Energy Exploration & Production	2
		Total	20

2nd Year

SEMESTER – 4

No	Code	Subject	Credit
22	PE 2201	Reservoir Engineering	3
23	PE 2202	Drilling Engineering I+ Practice	3
24	PE 2203	Fluid Mechanic	3
25	PE 2204	Well Logging	3
26	PE 2205	Partial Differential Equation	3
27	GL3105	Petroleum Geology	3
28	ME2201	Mechanics and Material Strength	2
		Total	20

2nd Year

SEMESTER – 5

No	Code	Subject	Credit
29	PE 3101	Reservoir Engineering II	3
30	PE 3102	Drilling Engineering II + Practice	3
31	PE 3103	Production Engineering I	3
32	PE 3104	Well Test	3
33	PE 3105	Numerical Method	3
34	PE 3106	Well Completion & Work Over	2
35	UP0012	Pancasila and Citizenship	2
		Total	19

3rd Year

SEMESTER – 6

No	Code	Subject	Credit
36	GL3201	Geological Seismic Interpretation	3
37	GL3202	Formation Evaluation	2
38	GL3204	Field Geology	4
39	GL3205	Geology of Indonesia	2
40	GL3206	Genesis of Economic Minerals	2
41	GL3207	Engineering geology	3
42	GP3106	Geo-statistics	2
43	UP0012	Pancasila and Citizenship	2
		Total	20

3rd Year

SEMESTER – 7

No	Code	Subject	Credit
44	PE 4101	Geothermal Engineering	3
45	PE 4102	Natural Gas Engineering	3
46	PE 4103	Reservoir Simulation	3
48	PE 4104	Petroleum Field Development	3
49	PE 4105	Integrated Field Project	3
50	CO0011	Job Preparation & Professional Ethics	2
51		Elective Course	3
		Total	20

4th Year

SEMESTER – 8

No	Code	Subject	Credit
52	PE4001	Bachelor Thesis	5
53	GL4202	Elective Course 1	2
54		Elective Course 2	3
		Total	10

4th Year

ELECTIVE COURSES

No	Code	Subject	Credit
55	PE 3002	Non-Conventional Hydrocarbon	3
56	PE 3003	Law & Regulation in Petroleum	3
57	PE 4002	Capita and Selecta in Production	2
58	PE 4003	Capita Selecta in Drilling	2
59	PE 4004	Reservoir Characterization & Description	3
60	PE 4005	Carbonate & Naturally Fracture Reservoir	3
61	PE 4006	Production Problems	3
62	PE 4007	Production Optimization	3
63	PE 4008	Modern Drilling Techniques	3
64	PE 4009	Well Control	3
65	PE 4010	Oil and Gas Offshore Operations	3
66	PE 4011	Well Design	3
		Total	34

Availability to be confirmed

ELECTIVE COURSES (Non-Petroleum Engineering)

No	Code	Subject	Credit	
67	MN3102	Logistics and Supply Chain Management	3	*Availability to be confirmed*
68	MN3106	Entrepreneurship	3	
69	MN3211	Project Management	3	
70	EV 4261	Intro to Environmental Impact Assessment (EIA)	3	
71	EV 4262	Climate Change & Env. Issues	3	
		Total	34	

FACULTY OF SCIENCE AND COMPUTER

COMPUTER SCIENCE COURSES

SEMESTER – 1

No	Code	Subject	Credit	
1	UP1104	Calculus I	4	1st Year
2	UP1105	Physics I	4	
3	CH1101	Chemistry I	3	
4	UP1101	Critical Thinking	1	
5	UP1103	English I	2	
6	UP1102	Scientific Writing	2	
7	CS0012	Introduction to Information Technology and Algorithm	2	
		Total	18	

SEMESTER – 2

No	Code	Subject	Credit	
1	UP1201	Basic Programming	4	1st Year
2	UP1202	Physics II	4	
3	CH1202	Chemistry II	3	
4	CS1215	Basic Programming	1	
5	UP1204	Creative problem solving	2	
6	UP1203	English II	2	
7	UP0013	Introduction to Technology and Business of Energy	2	
		Total	18	

SEMESTER – 3

No	Code	Subject	Credit	
1	CS2111	Algorithm and Data Structures	3	2nd Year
2	CS2112	Discrete Mathematics	4	
3	CS2113	Computer Organization and Architecture	3	
4	CS2114	Database	3	
5	CS2115	Graph Theory	3	
6	UP2101	Engineering Mathematics 1	3	
		Total	19	

SEMESTER – 4

No	Code	Subject	Credit
1	CS2211	Object Oriented Programming	4
2	CS2212	Automata	3
3	CS2213	Management Information System	2
4	CS2214	Probability and Statistics	3
5	CS2215	Software Engineering	2

6	CS2216	Operating System	3	2nd Year
7	UP0011	Religion and Ethics	2	
			19	

SEMESTER – 5

No	Code	Subject	Credit	
1	CS3111	Web Programming	3	3rd Year
2	CS3112	Human Computer Interaction	3	
3	CS3116	Artificial Intelligence	3	
4	CS3113	System Analysis and Design	3	
5	CS3114	Algorithm Design and Analysis	4	
6	CS3115	Computer Networks	3	
			19	

SEMESTER – 6

No	Code	Subject	Credit	
1	UP0012	Civics Education	2	3rd Year
2	CS3211	Software Quality Assurance	3	
3	CS3212	Software Management	3	
4	CS3213	Distributed System and Parallel Computing	4	
5	CS3215	Numerical and Computational Method	3	
6	CS3214	Cryptography and Information Security	3	
7	CS3216	Computer and Society	2	
8		Total	20	

SEMESTER – 7

No	Code	Subject	Credit	
1	CS4111	Internship	2	4th Year
2	CS4112	Green Computing	2	
3	CS4115	Interdiciplinary Project	3	
4	CS4114	Research Method	2	
5	CS4113	Technopreneurship	3	
6		Elective Course 1		
7		Elective Course 2		
		Total	12	

SEMESTER – 8

No	Code	Subject	Credit	
1	CO0011	Professional Ethics	2	4th Year
2	CS4212	Bachelor Thesis	5	
3	CS00XX	Elective Course 3		
4	CS00XX	Elective Course 4		
		Total	7	

CHEMISTRY COURSES

SEMESTER – 1

1st Year

No	Code	Subject	Credit
1	UP0013	Introduction to Technology and Business of Energy	2
2	UP1103	English I	2
3	UP1102	Academic Writings	2
4	UP1101	Critical Thinking	1
5	UP1105	Physics I	4
6	UP1104	Calculus I	4
7	CH1101	Chemistry I	3
		Total	18

SEMESTER – 2

1st Year

No	Code	Subject	Credit
8	UP1201	Calculus II	4
9	UP1203	English II	2
10	UP1202	Physics II	4
11	CH1202	Chemistry II	3
12	CS0013	Introduction to Information Technology and Statistics	3
13	UP1204	Creative Problem Solving	2
		Total	18

SEMESTER – 3

2nd Year

No	Code	Subject	Credit
14	CH2101	Fundamental of Analytical Chemistry	4
15	CH2102	Chemical Structure and Bonding	3
16	CH2103	Organic Chemistry 1	4
17	CH2104	Inorganic Chemistry: Structure and Reactivity	3
18	UP2101	Engineering Mathematics	3
19	UP0012	Pancasila and Citizenship	2
		Total	19

SEMESTER – 4

2nd Year

No	Code	Subject	Credit
20	CH2201	Separation, Purrification and Electrometry	4
21	CH2202	Inorganic Chemistry:Main Groups	3
22	CH2203	Organic Chemistry 2	4
23	CH2204	Structure and function of biomacromolecules	4
24	CH2205	Laboratory Management	2
25	UP0011	Religion and Ethics	2
		Total	19

SEMESTER – 5

3rd Year

No	Code	Subject	Credit
26	CH3101	Instrumentation And Spectroscopy	4
27	CH3102	Coordination Chemistry	3
28	CH2103	Metabolism and Genetic Information	4
29	CH3104	Energetics and Kinetics	4
30	CH3105	Materials Chemistry	3
		Total	18

SEMESTER – 6

3rd Year

No	Code	Subject	Credit
31	CH3201	Structure Elucidation	3
32	CH3202	Polymer Chemistry	3
33	CH3203	Chemical Modeling And Fund Analysis	3
34	CH3204	Chemical Literature	2
35	CH3205	Surface Chemistry and Catalysis	3
36	CH3206	New and Renewable Energies	3
37	CH3207	Practical Work	2
		Total	19

SEMESTER – 7

No	Code	Subject	Credit
38	CH4101	Oil and Gas Chemistry	2
39	CH4102	Research and Methodology in Chemistry	3
40	CH4103	Chemometrics	2
41	EV4062	Introduction to Enviromental Science	2
42	CH4104	Project Management	3
43	CH4105	Muldisciplinary Projects	3
		Total	15

4th Year

SEMESTER – 8

No	Code	Subject	Credit
44	CH4201	Final Project	5
45	CO4011	Preparation for Entering the World of Work & Professional Ethics	2
		Total	7

4th Year

ELECTIVE COURSES

No	Code	Subject	Credit
46	CH3021	Health, Safety and Environment (K3L)	2
47	CH3022	Stereochemistry	2
48	CH3023	Medicinal Chemistry	2
49	CH 3121	Technopreneurship	3
50	CH3221	Synthesis of Nanomaterials	2
51	CH3222	Biomolecul Modelling and Simulations	3
52	CH3233	Industrial Biotechnology	3
53	CH3224	Membran Technology	2
54	CH3225	Sampling Techniques	2
55	CH3226	Applied Electrochemistry	2
56	CH3227	Organometallics	3
57	CH3228	Solid Characterization	2
58	CH4021	Computational Chemistry and its Applications	2
59	CH4022	Exploration Of Natural Products	2
60	CH4121	Organic Synthesis And Characterization	3
61	CH4122	Geochemistry	2
		Total	37

Availability to be confirmed

FACULTY OF ECONOMICS AND BUSINESSES

MANAGEMENT COURSES

SEMESTER – 1

No	Code	Subject	Credit
1	EC1101	Microeconomics	3
2	CS1101	Introduction to Information Technology	2
3	MN1101	Introduction to Business	3
4	UP1103	English 1	2
5	MN1102	Business Mathematics	3
6	UP1102	Writing Scientific Papers	2
7	UP1101	Critical Thinking	1
8	UP1106	The Concept of Knowledge and Science	2
		Total	18

1st Year

SEMESTER – 2

No	Code	Subject	Credit
9	MN1201	Introduction to Management	3
10	EC1202	Macroeconomics	3
11	UP0013	Technology and Business Energy	2
12	UP0011	Religion and Ethics	2
13	UP1203	English 2	2
14	UP1204	Creative Problem Solving	2
15	MN1202	Accounting	2
16	UP0012	Pancasila & Citizenship	2
		Total	18

1st Year

SHORT SEMESTER

No	Code	Subject	Credit
17	EC2104	The Economics of Indonesia	3
18	MN0001	Law and Business Ethics	3
19	MN0002	Business Communication	3
		Total	9

1st Year

SEMESTER – 3

No	Code	Subject	Credit
20	MN2101	Organizational Behavior	3
21	MN2102	Marketing Management	3
22	EC1102	Economics and Business Statistics 1	3
23	MN2103	Financial Management 1	3
24	MN2104	Management of Natural Resources and Environment	2
25	MN2105	Cost Accounting	3
26	MN2106	Operation Research	3
		Total	20

2nd Year

SEMESTER – 4

No	Code	Subject	Credit
27	MN2201	Consumer Behavior	3
28	MN2202	Financial Management 2	3
29	MN2203	International Business	2
30	MN2204	Managerial Accounting	3
31	MN2205	Human Resources Management	3
32	MN2206	Operation Management	3
33	EC1203	Economics and Business Statistics 2	3
		Total	20

2nd Year

SHORT SEMESTER

No	Code	Subject	Credit
34	MN0011	Research Methods for Business	3
35	MN0003	Sales Management	3
36	MN0004	Industrial Relations	3
		Total	9

2nd Year

SEMESTER – 5

No	Code	Subject	Credit
37	MN3101	Strategic Management	3
38		Elective Courses	2
39	MN3102	Brand Management	3
40	MN3103	Business Feasibility Study	3
41	MN3104	Management Information System	3
42	MN3105	Financial Institution and Markets	3

3rd Year

43	MN3106	Project Management	3
		Total	20

SEMESTER – 6

3rd Year

No	Code	Subject	Credit
44	MN3201	Entrepreneurship	3
45	MN3202	Writing Technique and Research Proposal	3
46		Compulsory Concentration Courses	3
47		Compulsory Concentration Courses	3
48		Free Concentration Courses	3
49	MN3203	Managerial Decision Making	3
50	MN3204	Internship	2
		Total	20

SEMESTER – 7

4th Year

No	Code	Subject	Credit
51	MN4111	Final Project	5
52	CO0011	Preparation to Enter Work and Profesional Ethics	2
53	UP0014	Integrated Business Development Project	3
		Total	10.

COMPULSORY CONCENTRATION ELECTIVE COURSES

No	Code	Subject	Credit
		Concentration of Financial Management	
54	MN3215	Investment and Portfolio Management	3
55	MN3216	Risk Management	3
		Concentration of Human Resources	
56	MN3213	Change Management and Organizational Development	3
57	MN3214	Training and Development Management	3
58		***Concentration of Marketing Management***	
59	MN3217	Digital Marketing Strategy	3
60	MN3218	Service Marketing	3

Availability to be confirmed

	Concentration of Operational Management		
61	MN3211	Supply Chain Management	3
62	MN3212	Operational Outsourcing Management	3
	Concentration of Enterpreneurship		
63	MN3219	Creativity and Innovation	3
64	MN3220	Product Development	3
		Total	30

FREE CONCENTRATION ELECTIVE COURSES

No	Code	Subject	Credit	
65	MN3221	Total Quality Management	3	
66	MN3222	Procurement and Inventory Management	3	
67	MN3224	Management of Contract Labor and Outsourcing of Human Resources	3	
68	MN3225	Work Management	3	
69	MN3227	International Financial Management	3	
70	MN3228	Islamic Financial and Banking Management	3	*Availability to be confirmed*
71	MN3230	Marketing Research	3	
72	MN3231	Customer Relationship Management	3	
73	MN3233	Management of Cooperatives and Small Medium Enterprises	3	
74	MN3234	Online Business	3	
75	MN3141	Taxation	2	
76	MN3142	Islamic Business	2	
77	MN3143	Safety and Security Management	2	
78	MN3144	Mandarin Language	2	
79	MN3145	French Language	2	
80	MN3146	Arabic Language	2	
		Total	30	

ECONOMICS COURSES

SEMESTER – 1

No	Code	Subject	Credit
1	EC 1101	Introduction to Microeconomics	3
2	EC 1102	Statistics for Economics and Business	3
3	EC 1103	Basic Mathematics)	3
4	CS 1101	Introduction to Information Technology	2
5	UP 1101	Critical Thinking	1
6	UP 1102	Scientific Writing	2
7	UP 1103	English 1	2
8	UP 1106	Concept of Science Development	2
		Total	18

1st Year

SEMESTER – 2

No	Code	Subject	Credit
9	EC1201	History of Economic Theory	3
10	EC1202	Introduction to Macroeconomics	3
11	EC1203	Advanced Statistics for Economics and Business	3
12	EC1204	Mathematical Economics	3
13	UP0013	Introduction to Technology and Business Energy	2
14	UP1203	English 2	2
15	UP1204	Creative Problem Solving	2
		Total	18

1st Year

SHORT SEMESTER

No	Code	Subject	Credit
16	EC 1302	Advanced Mathematical Economics	3
17	EC 1303	Eonomic Development	3
18	EC 2104	Indonesian Economy	3
		Total	9

1st Year

SEMESTER – 3

2nd Year

No	Code	Subject	Credit
19	EC 1301	Microeconomics I	3
20	EC 2101	Macroeconomics 2	3
21	EC 2105	Cooperative Economics and Small Medium Enterprise	3
22	EC 2103	Econometrics I	3
23	EC 3101	Regional Economics	3
24	MN1101	Introduction to Business	3
25	UP0011	Religion and Ethics	2
		Total	20

SEMESTER – 4

2nd Year

No	Code	Subject	Credit
26	EC2102	Microeconomics 2	3
27	EC2201	Macroeconomics 2	3
28	EC2202	Econometrics 2	3
29	EC2203	Economics for Public Sector	3
30	EC 204	Human Resource and Labor Economic	3
31	EC2205	International Trade	3
32	MN 201	Introduction to Management	3
		Total	21

SHORT SEMESTER

2nd Year

No	Code	Subject	Credit
33	EC 2301	Research Methodology	2
34	EC 2302	Project Management	2
35	MN1202	Accounting Principles	2
		Total	6

SEMESTER – 5

3rd Year

No	Code	Subject	Credit
37	EC 3102	Energy Economics	3
38	EC 3103	Industrial Organization	3
39	EC 3104	Natural and Resources Environmental Economic	3
40	EC 3105	Monetary Economics	3
41	EC 3106	Qualitative Economic Model	3

42	EC 2206	Green Economics	3
43	MN2103	Financial Management	3
		Total	20

SEMESTER – 6

No	Code	Subject	Credit
44	EC 3201	Energy Market and Trading	3
45	EC 3202	International Finance	3
46	EC 3203	Central Bank and Financial Institution	3
47	UP0012	Pancasila and Citizenship	2
48	CO0012	Preparation for Entering Work and Professional Ethics	2
49		Elective Course 1	3
50		Elective Course 2	3
51		Elective Course 3	3
		Total	22

3rd Year

SEMESTER – 7

No	Code	Subject	Credit
52	EC 4101	Integrated Project	3
53	EC 0001	Internship	2
54	EC 0002	Thesis	5
		Total	10.

4th Year

ELECTIVE COURSES

No	Code	Subject	Credit
55	EC 3205	Economic Modelling	3
56	EC 3206	Natural Resource and Environmental Evaluation	3
57	EC 3207	Analysis of Public Policy	3
58	EC 3208	Digital Economics	3
59	EC 3209	Health Economics	3
60	EC 3210	Shari'ah Economics	3
61	EC 3211	Political Economics	3
		Total	21

Availability to be confirmed

FACULTY OF COMMUNICATION AND DIPLOMACY

INTERNATIONAL RELATION COURSES

SEMESTER – 1

No	Code	Subject	Credit
1	UP1101	Critical Thinking	1
2	UP1102	Academic Writing	2
3	UP1103	English 1	2
4	EC1104	Introduction to Economics	3
5	UP1106	The Concept of Knowledge and Science	2
6	UP1107	Introduction to Political Science	3
7	UP1108	Introduction to Law	3
8	IR1101	History of Modern World	3
		Total	19

1st Year

SEMESTER – 2

No	Code	Subject	Credit
9	UP0011	Religion and Ethics	2
10	UP0013	Introduction to Business and Energy Technology	2
11	UP1205	Philosophy of Science	3
12	UP1203	English II	4
13	UP1205	Creative Thinking	2
14	IR1201	Introduction to International Relations	3
15	IR1202	International Law	3
		Total	19

1st Year

SHORT SEMESTER

No	Code	Subject	Credit
16	UP0012	Pancasila and Citizenship	2
17	MN1201	Introduction to Management	3
18	IR1300	Development of Information Technology	3
		Total	8

1st Year

SEMESTER – 3

No	Code	Subject	Credit
19	IR2101	International Relations Theory 1	2
20	IR2102	Diplomacy and Negotiation	3
21	IR2103	Foreign Policy (Indonesia)	3
22	IR2104	World Politics	3
23	IR2105	Globalization and Regionalism	3
24	IR2106	Introduction to Security Studies	3
25	IR2107	Introduction to International Political Economy	3
		Total	20

2nd Year

SEMESTER – 4

No	Code	Subject	Credit
26	IR2201	International Relations Theory 2	3
27	IR2202	International Organization	3
28	IR2205	Indonesia's Economic Diplomacy	3
29	IR2206	Indonesia's Defense Diplomacy	3
30	IR2203	Geo-economy and geostrategy	3
31	IR2204	Contemporary World Order	3
32	IR2207	US Global Policy	3
		Total	21

2nd Year

SHORT SEMESTER

No	Code	Subject	Credit
33	IR1301	The dynamics of European Region	3
34	IR1302	The dynamic of Asia-Pacific region	3
35	IR1303	The dynamic of South-American region	3
		Total	9

2nd Year

SEMESTER – 5

No	Code	Subject	Credit
36	IR3111	Social Research Method	3
37	IR3101	Global Governance	3
38	IR3102	Energy and Development	3
39	IR3105	Non-Conventional Issues	3
40	IR3103	China's Global Policy	3

3rd Year

41	IR3104	The dynamics of Middle East and North Africa region	3
		Total	18

SEMESTER – 6

3rd Year

No	Code	Subject	Credit
42	IR3201	International Relations Research Method	3
43	IR3211	Multidisciplinary Project	3
44	IR4101	Problem Choice Seminar	3
45	IR3212	Indonesia's Energy Diplomacy	3
46		Elective Course 1	2
47		Elective Course 2	2
48		Elective Course 3	2
49	CO0011	Career Preparation Project Management	2
		Total	20

SEMESTER – 7

4th Year

No	Code	Subject	Credit
50	IR4111	Practical Work	2
51	IR4102	Environmental Issues in International Relations	3
52	IR4112	Thesis	5
53	IR4103	ASEAN Community	3
		Total	13.

ELECTIVE COURSES

No	Code	Subject	Credit
54	IR3222	Indonesia's Defense Strategy	2
55	IR3223	Political Economy of Energy	2
56	IR3224	Geopolitics of Energy	2
57	IR3225	International Energy Actors	2
58	IR3212	Indonesia's Energy Diplomacy	3

59	IR3214	Global Energy Regime	2	*Availability to be confirmed*
60	IR3213	State and Energy Security	3	
61	IR3215	Energy Business and Conflict	2	
62	IR3221	Indonesia's Energy Policy	2	
63	IR3226	Capita Selecta 1	2	
64	IR3227	Capita Selecta 2	2	
65	IR3228	Capita Selecta 3	2	
		Total	26	

COMMUNICATION COURSES

SEMESTER – 1

No	Code	Subject	Credit
1	CO1101	Introduction to Anthropology	2
2	CO1102	Introduction to Sociology	3
3	CO1103	Introduction to Communication	3
4	UP1102	Academic Writing	2
5	UP1103	English I	2
6	UP1101	Critical Thinking	1
7	UP1106	The Concept of Knowledge and Science	2
		Total	15

1st Year

SEMESTER – 2

No	Code	Subject	Credit
8	UP0011	Religion and Ethics	2
9	UP0013	Introduction to Business and Energy Technology	2
10	UP1205	Philosophy of Science	3
11	UP1203	English II	4
12	UP1205	Creative Thinking	2
13	CO1201	Communication Theories	3
14	MN1201	Introduction to Management	3
		Total	19

1st Year

SHORT SEMESTER

No	Code	Subject	Credit
15	C01301	Group Communication	3
16	C01302	Interpersonal Communication	3
17	C01303	Development of Information and Communication Technology	3
		Total	9

1st Year

SEMESTER – 3

2nd Year

No	Code	Subject	Credit
18	C02102	Sociology of Communication	3
19	CO2103	Basic of Strategic Communication	3
20	CO2104	Basic of Journalistic	3
21	C02105	Media Literacy and Information	3
22	C02106	Organizational Communication	3
23	UP0012	Pancasila and Citizenship	2
24	CO2101	Mass Communication	3
		Total	20

SEMESTER – 4

2nd Year

No	Code	Subject	Credit
25	CO2201	Media Management	3
26	CO2202	Public Relations	3
27	CO2203	Visual Communication	3
28	CO2204	Public Speaking	2
29	CO2205	Marketing Communication	3
30	CO2206	Customer Behavior	3
31	CO2207	Psychology of Communication	3
		Total	20

SHORT SEMESTER

2nd Year

No	Code	Subject	Credit
32	CO2301	Intercultural Communication	3
33	CO2302	Social Statistics	3
34	CO2303	Political Communication	3
		Total	9

SEMESTER – 5

3rd Year

No	Code	Subject	Credit
35	CO3101	Multimedia Content Production	3
36	CO3102	Quantitative Communication Research Methods	3
37	CO3103	Energy Communication	3
38	CO3104	Social Marketing Management	3
39	CO3105	Political Economy of Communication	3
40	CO3106	Communication Law and Ethics	3

41	CO3107	Career Development	1
42		Elective Course	2
		Total	18

SEMESTER – 6

3rd Year

No	Code	Subject	Credit
43	CO3201	Qualitative Communication Research Methods	3
44	CO3102	Crisis and Risk Communication	3
45	CO3203	Cinematography	2
46		Elective Course 1	3
47		Elective Course 2	3
48		Elective Course 3	3
49	UP004	Multidisciplinary Project	3
		Total	20

SEMESTER – 7

4th Year

No	Code	Subject	Credit
50	CO4102	Contemporary Communication Issues	3
51	CO4103	Thesis	5
52	CO4104	Practical Work	2
		Total	10

ELECTIVE COURSES

Availability to be confirmed

No	Code	Subject	Credit
53	CO3221	Writing Public Relations	3
54	CO3222	Advertisement Production	3
55	CO3223	Activity Management	3
56	CO3224	Journalistic writing and reporting	3
57	CO3225	Media Entrepreneurship	3
58	CO3226	Digital Media and Society	3
59	CO3121	Digital Based Business	3
60	CO3122	Creative Writing	3

61	CO3103	Communication on Climate Change and the Environment	3
62	CO3124	Sport Communication	3
63	CO3125	Health Communication	3
64	CO3126	Financial Company Communication	3
65	CO3237	Gender Communication	3
66	CO3128	Celebrity and Infotainment Studies	3
		Total	42

COURSES SHORT DESCRIPTION

UNIVERSITY MANDATORY COURSES

UNIVERSITY COURSES				
FIRST YEAR SEMESTER (AUGUST – DECEMBER)				
No	**Code**	**Credit**	**Subject**	**Description**
1	UP1103	2	English 1	This course will discuss about critical Reading and Writing which aim to familiarize students with ways of critical thinking and effective communication skills, especially in reading activities that include stages: before reading, during the reading process, and after the reading process. Students are given and equipped with skills to analyze an article or book that is relevant to their reading needs, critically identify ideas that are relevant to their reading needs by using annotations, etc., and identify various ideas, such as main ideas, supporting ideas, arguments, and objections.
2	UP1102	2	Academic Writing	This course studies and hone the writing skills and talks in the scientific realm. These skills include the ability to compile scientific papers in accordance with applicable rules.
3	UP1101	1	Critical Thinking	This course studies elements of thinking that exist in humans and teaches standards of critical thinking so that eventually students thinking processes be more organized and structured.
4	UP1106	2	The Concept of Knowledge and Science	This course contains the general concept of natural science which deals directly and indirectly with the development of certain technologies and number of environmental problems and their relation to social aspects.
5	UP0014	3	Integrated Business Development project	This course introduces students to the concept of integrated business development project management to achieve organizational goals and helps students understand the concepts, stages, and objectives of the stages of integrated business development.
6	UP1104	4	Calculus 1	This course will study about calculus for a single variable. The course covers the functions and operations, the area of origin and the result area of a function, drawing functions, limits and continuity of functions, derivatives and their applications, and integrals and their applications.

7	UP2101	3	Engineering Mathematics 1	This course studies vector space, linear equations, matrices, eigen values, 1st order differential equations and order 2, and Laplace transforms to solve problems in engineering and science.
8	UP1105	4	Physics 1	The Basic Physics I course contains topics on classical mechanics and heat and thermodynamics as basic science knowledge to support advanced education in the field of engineering.

UNIVERSITY COURSES

SECOND YEAR SEMESTER (JANUARY-MAY)

No	Code	Credit	Subject	Description
9	UP0013	2	Technology and Business Energy	This course discusses the basic concepts of energy starting from the definition, types, forms and technology used to obtain them, utilization of energy and its influence on economic, social and environmental aspects, both fossil energy and renewable energy.
10	UP0011	2	Religion and Ethics	This course discusses the basic of knowledge about religion that need to be known and understood by students to be practiced everyday life and give color to their interactions with study programs that are explored and the development of science and technology.
11	UP1203	2	English 2	This course is designed to equip students with training and experience to deliver effective oral presentations on various academic occasions. In addition to focusing on the content, structure, and ways of delivering oral presentations, the focus of learning is certain aspects needed to improve public speaking skills, including pronunciation, volume, intonation and body language, to help improve the overall presentation skills of students.
12	UP1204	2	Creative Problem Solving	In this course students learn about heuristics and the basic concepts of Creative Solution Thinking and their application in solving problems that occur in both personal, organizational and public domains.

13	UP1201	4	Calculus 2	This course will be a continuation of Calculus I with the scope of the material in general is about: Sequence and Series, Parameterization of curves, vectors, multivariable function which include derivative and double integrals, and line integrals.
14	UP1202	4	Basic Physics 2	This course contains teaching materials about Electricity-Magnetism, Electromagnetic Waves and Modern Physics as basic science knowledge to support advanced education in the field of engineering.
15	UP1203	2	English 2	This course is designed to provide students with training and experience in delivering effective oral presentations in various academic settings.
16	UP1204	2	Creative Problem Solving	In this course students learn about heuristics and the basic concepts of Creative Problem Solving and their applications in solving problems that occur in both personal, organizational and public domains.
17	UP2201	3	Engineering Mathematics 2	The orientation of this course is on the efficiency of mathematical methods that are supported by the concepts and reasoning in formulating and solving problems of civil engineering and other practical problems. Fourier series; The Sturm-Liouvile Theory; Fourier transform; Fourier integral; Diffusion Equation; Wave Equation.
18	UP0012	2	Pancasila and Citizenship	This course focuses on developing the knowledge, understanding and insight of Indonesian nationality as a basis for self-development of students and / or professionals so that they become complete human beings, including; devotion to God Almighty, having morality, ethics and personality that is good at completing tasks, acts as a citizen who is proud and loves his country and supports world peace efforts, is able to work together and has a high concern and social awareness towards society and the environment, respect the diversity of cultures, views, beliefs, and religions as well opinions or creations of others, upholding law enforcement efforts, and having the spirit to prioritize the interests of the nation and state above personal interests.

FACULTY OF PLANNING AND INFRASTRUCTURE

ENVIRONMENTAL ENGINEERING

FIRST YEAR SEMESTER (AUGUST-DECEMBER)

No	Code	Semester	Credits	Subject	Description
;	EV1101	1	3	Introduction to Environmental Engineering and Climate Change	This course is designed to introduce the basic principle of environmental engineering, professional career opportunity and global environmental issues regarding climate change (impacts, mitigation and adaptation).
2	EV2101	3	3	Environmental Chemistry	This course is designed to understand the sources, reactions, behavior, transportation, and various influences of chemistry in the hydrosphere, atmosphere, geosphere and antrosphere and the influence of human activity on these processes.
3	EV2102	3	3	Environmental Microbiology	This course is designed to understand the basic concepts of microbiology, the development of methods for studying microorganisms, microorganisme ecology and the introduction of the implementation of microbiology to environmental engineering problems.
4	EV2103	3	3	Environmental Statistics	This course is designed to understand the basic concepts of statistics, case study is delivered in the field of environmental engineering problem.
5	EV2104	3	3	Fluid Mechanics 1	This course is designed to understand the basic concepts of fluid behavior, understanding of the mechanical characteristics of fluids in the field of environmental engineering.

6	EV2105	3	3	Engineering Drawing	This course is designed to understand the basic knowledge of drawing techniques through theoritical and practical work by manual and computer aided design (CAD).
7	GL2004	3	2	Introduction to Geographic Information Systems	This course is designed to understand the basic concept and processing of geographic information systems (GIS) and its applications for geology and environmental.
8	EV3101	5	3	Soil and Groundwater Pollution	In this course student will learn about the characteristics, properties and various physical, chemical and biological processes that contained in the soil. Moreover the movement of groundwater flow, and how these processes affect the transport of contaminants in the soil and groundwater will be also discussed in this course.
9	EV3102	5	2	Environmental Management System	In this course student will learn about the basic principles of environmental management, especially related to ISO 14000.
10	EV3103	5	2	Introduction to Environmental Modelling	In this course student will learn about the basics concept of mathematical modeling using numerical methods as an alternative solution to the problems that commonly occur in the field of engineering and especially in the field of environmental engineering. The logic of mathematical modeling is learned by building a simple model using Fortran 90 programming language.

11	EV3104	5	3	Water Supply System	In this course student will learn about various components and techniques which are necessary for water supply system such as regulations relating to water and drinking water resources. The source, form of appearance and characteristics of raw water, estimation of water needed; design of raw water collection building, and the design of transmission and distribution systems.
12	EV3105	5	3	Drainage and Sewerage	In this course student will learn about the basic concept of the planning of sewerage system and drainage system.
13	EV3106	5	3	Air Pollution	In this course student will learn about the principles of interaction and reaction of substances in the air, the influence of nature and human activities on air quality, the basics knowledge and engineering techniques that is needed in the prediction and monitoring of air quality and policies relating to the air quality management.
14	EV3107	5	2	Hazardous Materials and Waste Management	In this course student will learn about hazardous and toxic materials (B3), types of waste classified as B3, characteristics of B3, the concept of "Cradle-to-Grave" in the management of B3 waste, the flow chain of B3 waste and its documents, labeling, storage and transportation techniques.
15	EV3108	5	2	Energy and Environment	In this course students will learn about the impact of exploration and use of energy to the environment, measuring the impact of personal

					activities on energy use through the calculation of carbon footprint. Various efforts were discussed to reduce impacts of exploration and use of energy to the environment.
16	EV4101	7	3	Capstone Design on Environmental based Project	In this course students will work on a project in groups. Member of groups can be formed by fellow study programs or across study programs. In this project students will learn how to solve a complex problem as an environmental engineer.
17	EV0001	7	2	Internship	This course will introduce students to the work atmosphere and various real problems in the real work, especially related to the field of environmental engineering.
18	EV4103	7	2	Industrial Waste Treatment	In this course student will learn various methods of industrial waste management, including solid waste, wastewater, air pollution, and hazardous material.
19	EV4104	7	3	Health and Safety Environment	This course is designed to introduce safety and health management system (SMK3) with focusing on the basic principles of industrial hygiene: identification, evaluation, and controlling of hazard factors in the working environment; and to provide knowledge about diseases and disorders arising from the working environment.
20	CO4001	7	2	Career Preparation and Professional Ethics	This course focuses on preparing students to face the real work by providing knowledge on effective communication in the context of social interaction, including

					organizational communication, interpersonal communication, group communication, and cross-cultural communication.
21	EV4105	7	3	Environmental Impact Assessment	In this course student will learn about the historical background of environmental impact assessment (AMDAL) in the world and in Indonesia, legal aspects of AMDAL, other types of environmental permits besides AMDAL, processes in AMDAL, techniques for preparing AMDAL documents, and basis study of AMDAL.

CIVIL ENGINEERING

FIRST YEAR SEMESTER (AUGUST-DECEMBER)

No	Code	Semester	Credits	Subject	Description
1	CV1101	1	3	Introduction to Infrastructure	This subject introduce the types of infrastructure in civil engineering field.
2	CV2107	3	2	Introduction to Transportation Systems	This subject introduce to transportation system and elements of system, evolution of transportation technology and operation, aspects of transportation planning, basic principles of traffic engineering and management.
3	CV2101	3	3	Statics	This course provides students with the basic knowledge in structural theory and design. Apart from introducing students to statically determinate structures, the equilibrium of trusses, frames, beams. Forces; moments; free body diagrams; type of support; equilibrium; type of loads.
4	CV2102	3	3	Engineering Materials	In this course students are given an introduction to various types of materials used as civil construction materials in various fields such as concrete, steel, wood, and pavement materials along with their characteristics. In this course students also study concrete material, design calculations, and carry out concrete mixtures.
5	CV2103	3	2	Fluid Mechanics	This course provides an understanding on the physical characteristics of fluid, flowing properties and interactions between fluid flow dynamics with the jetting medium.

6	CV2104	3	2	Statistic and Probabilistic	This course introduces the concept of probability used in civil engineering field, such as the definition of probability, Venn diagram operations, and conditional probabilities. The statistical concepts discussed include data tabulation, parameter determination statistics (mean, variance, deviation), and the concept of probability distribution. College student will also be introduced to the concepts of data validation and regression analysis.
7	CV2105	3	2	Computer Programming and Application	This subject introduce the basic programming language concept and the utilitization in civil engineering field.
8	CV2106	3	2	Engineering Drawing	This lecture will study the role of construction drawings in civil engineering work and basic techniques to draw manually also using CAD. Topics will be discussed in this lecture include drawing building components, prespective, draw a floor plan.
9	CV3101	5	3	Structural Analysis 1	This course is intended to develop the ability to calculate deformation and analyze support reactions and internal forces for indeterminate structures using classical methods.
10	CV3102	5	3	Soil Mechanics 2	Topics will be discussed in this course include soil compressibility, lateral soil resistance, slope stability, compatibility test and in-situ test.
11	CV3103	5	3	Structural Steel Buildings	Topics will be discussed in this course include mechanical behavior of steel materials; structural steel planning

					concept; failure; structural steel component design; tension members; compression members; beam; bolted; and welded connections.
12	CV3104	5	2	Numerical Method	This course provides understanding of general knowledge about numerical methods, calculating the roots of non-linear equations one variable, solving simultaneous linear equations with several variables, calculating data interpolation, Data regression analysis, calculating the integral and differential values of an equation or from discrete data, calculating the differential value of an equation or from discrete data, and calculating Eigen Values and Eigen Vectors.
13	CV3105	5	3	Road Engineering	This course provides understanding of road classification based on applicable laws and regulations, analysis and planning of road geometric design starting from contour map, speed, vehicle, traffic volume superlevation visibility, friction, curved radius of road.
14	CV3106	5	2	Hydrodynamics	This course provide understanding of basic equations of fluid flow, flow pattern, fluid flow problem and their mathematical approximation, hydrodynamic pressure distribution and forces acting on rigid body in fluid.
15	CV3107	5	2	Construction Management	This course discusses various techniques and aspects of construction management,

					starting from the planning stage carried out by the owner, the design stage, the auction, until the implementation and the final stage.
16	CV4102	7	3	Earthquake Resistant Structure Engineering	Topics will be discuss in this course include the basic of reinforced concrete to withstand earthquake and the patternns of its foundation reinforcement. Students will also learn about the Indonesia's earthquake map.
17	CV4103	7	3	Method and Technology of Construction	Topics will be discuss in this course include planning and the implementation of construction activities such as aspects of systems, mechanisms, resources and construction technology used in various physical infrastructure facilities projects, ranging from preparatory work to erection and installation of various major civil buildings.

SECOND YEAR SEMESTER (JANUARY-MAY)

No	Code	Semester	Credits	Subject	Description
18	CV2201	4	2	Hydraulics	This course is to consolidate the principles of fluid mechanics and to apply them to civil engineering hydraulic problems.
19	CV2202	4	3	Soil Mechanics 1	In this course, students are given the knowledge about fundamentals of soil mechanics, composition and its classification; the flow of water through soils; the principle of effective stresses, stresses in a soil mass, shear strength of soil,

					and the bearing capacity of shallow foundation.
20	CV2203	4	3	Mechanics of Materials	This course provied the principal materials used for engineering purposes with special attention to mechanical properties and their importance to the engineer. Hands-on experience in testing of civil engineering materials.
21	CV2204	4	3	Hydrology	This course introduces the concept of the water cycle systems, such as evaporation and infiltration, stream measurement, statistic in hydrology, and runoff-hydrograph analysis. Introducing about the groundwater flow will be given at the end of semester.
22	CV2205	4	3	Ocean Wave Mechanics	Students will learn about wave parameters, engineering quantities waves, concepts of linear waves, wave transformations, and calculations wave force.
23	CV2206	4	2	Introduction to Surveying and Mapping	The Surveying part of this course aims to provide students with an overview on the surveying principles in determination of the differences in levelling between stations and of the coordinates of stations. Students will be introduced to basic surveying instruments and techniques through lectures and field work.
24	CV3201	6	3	Structural Analysis 2	The course introduces student to Analysis of statically indeterminate structures using matrix method. i.e. flexibility, stiffness, and direct stiffness methods, as it applies to trusses, beams and frames.
25	CV3202	6	3	Foundation Engineering	In this lecture, students learn several topics such as; a review of soil mechanics, bearing capacity and settlement for shallow foundations and deep

					foundations as well as retaining walls.
26	CV3203	6	3	Structural Concrete Buildings	The course introduces student to basic theory of flexure and flexural design of reinforced concrete beams, the behaviour of beams loaded in shear, serviceability, design of short columns, and design of slab.
27	CV3204	6	3	Structural Dynamics	The course introduces student to vibrations of Single-Degree-of-Freedom (SDOF) and Multi-Degree-of-Freedom (MDOF) systems, computational techniques for dynamic responses of SDOF and MDOF (shear building).
28	CV3205	6	3	Engineering Infrastructure Inter-Mode	This course provides the concept of ports, port infrastructure components, handling goods at the port, port hierarchy, movement demand analysis, infrastructure demand analysis, port area planning, airport concepts, airport infrastructure components, airport master plans.
29	CV3206	6	2	Ocean Wave Stochastic	This course provides students with knowledge and understanding to the concepts of Random Wave and the application in Ocean engineering problems.
30	CV4202	8	2	Engineering Economics	This course will study the economic analysis regarding a construction project.

ELECTIVE COURSES

No	Code	Credits	Subject	Description
31	CV4001	2	Finite Element Method	This course provides the knowledge about Finite Element Methods (FEM) in structure analysis and introduction to FEM Software.

32	CV4002	3	Desain of Offshore Structure	This course provides knowledge and understanding about the types of offshore structure, basic design and analysis for fixed offshore structure.
33	CV4003	3	Subsea Pipeline	This course provide student knowledge about design of subsea pipeline.
34	CV4004	2	Disasters and Infrastructure Failure	In this course students are given an introduction and knowledge of the earth's processes, hazards and disasters caused by those processes, which then affect human, environment, and infrastructures. Students also learn on how should the principles of civil engineering be applied to minimize infrastructure failures due to disasters. This course integrates the principles of geology, hydrology, meteorology, climatology, oceanography, soil science, ecology, and discusses ways to mitigate and reduce the risk of such hazards.
35	CV4005	3	Transport Demand Analysis	Transportation planning concept, interaction concept of layout and transportation, accessibility and mobility concept, modelling system concept, 4 steps transportation model, generation/attraction movement model, movement distribution model, mode choice model, movement assessment model, model of layout and transportation concept, and transportation model based on traffic flow data.
36	CV4006	3	Coastal Process and Structures	This course describes the meaning and the way to quantification the physically dynamic that is happened due to ocean environment force that works at the coast and also to design breakwater, seawall, jetty, and groin.
37	CV4007	2	Energy conversion of water resources	This course provide knowledge and understanding about potential renewable energy from water.
38	CV4008	3	Structural Building Engineering and Design	This couse will study about design structural building made of concrete and steel.

39	CV4009	3	Prestressed Concrete	This course provide basic design of the prestressed concrete structure, starting from the concept of prestressed concrete structures, the design of prestressed concrete structures and their use to meet the service capabilities of prestressed concrete structures.
40	CV4010	3	Design of Offshore Floating Structures	This course provide knowledge of analysis floating structures analysis, this course focused on characteristics of cylindrical floating structures with various mooring systems, static analysis and dynamic analysis. The lectures will be enriched with knowledge on installation methods, transportation, and completeness of the mooring system.

Notes: Elective courses will be held at 7/8 semester

FACULTY OF INDUSTRIAL TECHNOLOGY

ELECTRICAL ENGINEERING

FIRST YEAR SEMESTER (AUGUST-DECEMBER)

No	Code	Semester	Credits	Subject	Description
1	CH1101	1	3	Basic Chemistry I	This course learns the fundamental concepts of chemistry.
2	CS0012	1	2	Introduction to Information Technology - Algorithm	This course provides basic skills regarding the development of information technology, computational thinking skills as a problem solving technique, and procedural programming techniques in certain programming languages as their implementation. courses are conducted face-to-face as the delivery of material in class and lab work in the laboratory.
3	EE2112	3	3	Electromagnetic	This course studies the concepts of electromagnetic fields and their application to the theory of conductor materials, semiconductors, capacitors, inductors and on electric machines.
4	EE2114	3	3	Discrete Mathematics	This course studies discrete mathematical concepts which include logic, set, relations and functions, number theory, combinatorial, boolean algebra, graphs and trees.
5	EE2115	3	3	Linear System	This course studies signals and systems, convolution, continuous and discrete time systems, Fourier series, Fourier transform, Laplace transform, and z-transform. In this course, the implementation of signal concepts and systems was introduced in MATLAB.

6	EE3111	5	4	Electronic Circuit II + Laboratory Practices	This course will study the concepts and applications of analog operational amplifier circuits such as inverting amplifier circuits, voltage followers, inverted amplifier circuits, inverted sum sums, difference amplifier circuits and instrumentation amplifiers. In addition, a number of comparison circuits, signal generator sequences, op-amp circuits with diodes will also be studied.
7	EE3112	5	4	Basic Energy Conversion + Laboratory Practices	This course studies the process of converting various kinds of energy sources into electrical or mechanical energy, starting from the generation of primary energy to other energy that can be utilized. An understanding of the basic principles of energy conversion elements is also studied in this course. In addition, practical activities and making a simple energy conversion system are carried out to support understanding of the application of energy conversion.
8	EE3115	5	3	Numerical Method	This course will discuss problem solving methods in the field of engineering using a numerical approach and will describe how to find solutions to an error, a numerical solution of linear and non-linear equations, a closed method (bisection etc.), curve matching, open method (iteration, newton raphson, etc.), numerical integrals, numerical derivatives, interpolation methods, and

					solutions of differential equations. The programming language that can be used is C or python or java or matlab or julia.
9	EE3113	5	4	Digital Signal Processing	In this course, student will learn discrete signal and system representation in time and frequency domain, Sampling and signal reconstruction, digital filter design, application of discrete system in digital electronic devices
10	EE3114	5	4	Microprosessor + Laboratory Practices	This course learns about the basic concepts of microprocessors and their architecture. Continued to discuss the basic concepts of the microcontroller including hardware and software and the implementation of simple microcontroller applications.
11	EE4111	7	3	Intelligent Control System	In this course students learn about the concept of intelligent regulatory systems to how to design intelligent controllers and their applications. Subject: The concept of intelligent regulation system, Fuzzy logic control, Artificial Neural Network, Genetic Algorithm.
12	EE4112	7	3	Electrical Machine Drive	This course is about the working characteristics of alternating and unidirectional electric motors, function and load characteristics, selection and suitability of electric motor and load characteristics, starting method, speed regulation and braking of electric motors with contactors, power electronics-microprocessor, programmable logical control (PLC), economic calculation

				of energy use in electric machines, transformation park method in electric motors, electric motor performance models and simulations in the dqn axis with transformation park.

SECOND YEAR SEMESTER (JANUARY-MAY)

No	Code	Semester	Credits	Subject	Description
13	EE2116	2	3	Measurement and Electrical Circuit I	This course learns about the basic concepts of circuits, basic laws, circuit analysis techniques, basic components of electric circuit constituents, time response in sequence 1-order and 2nd-order for DC circuits (direct current) and learn the basics of measuring electrical quantities and types of measuring devices.
14	EE2111	2	3	Introduction to Electrical Engineering	This course learns about the introduction of the fields of expertise from electrical engineering, namely, power systems engineering, telecommunications engineering, regulatory systems engineering, electronics engineering, computer engineering. In addition, this course provides an introduction to the technology of renewable energy and its contribution to the environment.
15	EE2211	4	2	Probability and Statistics	This course learns about probability theory and mathematical statistics that emphasize the probabilistic foundations needed to understand probability models, statistical methods, and their applications in

					general cases and cases in electrical engineering.
16	EE2212	4	4	Digital Circuit + Laboratory Practices	This course studies the concepts of number and code number systems, logic gates, boolean algebra, simplification of logic equations, combinational circuits, sequential circuits, registers and counters, and making applications from digital circuits.
17	EE2213	4	3	Electronic Circuit I	This subject will learn about the basis of electronic circuit components, namely semiconductors which include diodes, bipolar junction transistors, field effect transistors, discussion will cover the characteristics of components, current and voltage analysis in circuits, frequency response, application of semiconductor components as rectifiers, clippers, clamps , regulator, voltage multiplier, amplifier.
18	EE2214	4	4	Basic Control System + Laboratory Practices	This course studies the concepts of control systems, linear system design, system stability and performance analysis. Control system design and analysis are implemented in the time and frequency domain. In this course the concept of state space is also introduced.
19	EE2215	4	3	Measurement and Electrical Circuit II + Laboratory Practice	This course studies the advanced concepts of electrical circuits, especially regarding alternating circuits (AC), steady-state analysis of 1 phase and 3 phase power, and electrical circuit analysis using the transfer function method. In addition, the practicum is also a structured activity carried out to support the understanding of this course.

20	EE3011	6	2	Internship	Preparing the world work for student and conducting a report from it.
21	EE3211	6	4	Electrical Machines + Laboratory Practices	This course learns the characteristic, mathematic models,control system and application from transformator in industry, also DC and AC machine electricity.
22	EE3212	6	2	Otomation Engineering	This course will learn about the development of automation technology in industry, especiall using Programmable Logic Controller (PLC). The PLC discussion will covers hardware, software, the programming, installation, and the communication system.
23	EE3213	6	2	Electrical Material Engineering	This course will give the general knowledge about technical material seen from the nature or the electricity characteristics. The student will also taught about utilization of the electrical material.
24	EE3214	6	3	Power System Analysis + Laboratory Practices	This course studies the mathematical formulations of electrical power system components, and to instill in-depth knowledge of various methods of power flow solutions, symmetrical and asymmetrical short circuit analysis, contingency analysis, and stability analysis. Programming languages like C or Python or Java or Julia are needed for this course so that students can better understand and explore the analysis of electric power systems and implement them in the form of programs.
25	EE3215	6	3	Power Electronics	This course discusses the resolution of power electronics, its constituent components, the method of triggering power

					converters for AC or DC. It is expected that in this course students can choose a power converter circuit to be applied to simple industrial applications.
26	EE3216	6	2	Engineering Optimization	In this course students learn about optimization concepts, optimization techniques, and the use of optimization techniques in accordance with relevant problems.
27	EE4211	8	2	Project Management and Occupational Helath and Safety	This course will discuss project management practices and rules about K3 (Occupational Health Safety). The topics in this course will discuss project introduction, organizational influences and project cycles, project management processes, project integration, work scope management, project time management, project quality management, project risk management, K3 management system, and K3 habits.
28	EE4012	8	5	Bachelor Thesis I	Final project for bachelor.

ELECTIVE COURSES
POWER SYSTEM ENGINEERING

No	Code	Credits	Subject	Description
29	EE0021	2	Renewable Energy	This course studies the characteristics and principles of operating renewable energy sources and studies the technologies that exist in new renewable energy systems, especially in solar, wind and water power systems.
30	EE0022	2	Power System Protection	This course will explain the system and operation of an electric power protection system. In this course the outline will be divided into two topics,

				namely internal and external protection systems. Which is where the internal system will learn about system security equipment, namely Circuit breaker, Fuse, and Relay, besides that it will also discuss how the system of coordination of all these equipment to the system. External System Protection will study the system of lightning phenomena, current waves and coordination of protection systems used in homes, industries and buildings.
31	EE0023	2	Power System Planning and Maintenance	In this course, discussion and deepening of the maintenance of electric power system equipment will be explained because the electric power industry is being challenged by "aging infrastructure" both in local and regional electricity networks where many equipment is quite old and in some cases very get worse. Care, especially testing to determine conditions and formulate a plan for proper service and repairs will also be discussed. In this course you will study various kinds of factors to evaluate old equipment for maintenance purposes. Even in this course we will learn about new methods according to standards to monitor equipment conditions with the aim of improving operations and efficiency.
32	EE0024	2	Optimum Operation of Power System	This course studies various loading generator and generator scheduling in interconnection system with the aim of getting optimum condition.
33	EE0025	2	Power System Design	This course will discuss the stages and methods for designing a power plant that will be adapted for industrial needs. Discussions in this course will include the design of transmissions and transmissions, protection systems, grounding and standards of power quality.

34	EE0026	2	High Voltage Direct Current Transmission	This course learns about the concepts and operations of transmission systems using direct current. In this course, the study will include converter circuits, network control systems, protection in direct current transmission systems.
35	EE0027	2	Energy Storage System	In this elective course, discussion and deepening of the types of energy storage systems and their characteristics will be explained because electrical energy storage systems provide various benefits from high energy efficiency, high reliability, low cost, etc., by storing and taking energy on demand because it is influenced by the operation of the electric power system. This energy storage system has a variety of applications, such as to handle system operations during contingency and maintenance for electric power, as a resource that can be used during emergencies, and so on. This storage system mainly relies on one type of energy storage technology, determining the type of element technology for energy storage that can meet all desired characteristics, such as high power / energy density, low cost, high cycle efficiency, and long equipment cycles is a challenge for energy storage system technology designers.
36	EE0028	2	Electrical Power Quality	This course focuses more on understanding: 1) characterizing power qualities such as transient disturbances; variations in short and long term voltage disturbances; voltage fluctuations; etc.; 2) Sources of problems such as low load factors, non-linear and unbalanced loads, interference with source voltage, and others. 3) Mitigation and monitoring of voltage sag and its effects and analysis of various other phenomena of power

				quality that occur in the electric power system.
37	EE0029	2	Electrical Installation System	This course will discuss standards, stages and design of electricity in homes, buildings and industries. In addition, students will learn how to determine the specifications of the electrical equipment needed and equipment protection systems.
38	EE0041	3	High Voltage Engineering	This course learns about the basics of high-voltage techniques and the equipment used, high-voltage generation, measurement and testing techniques. In addition, the materials used for electric power protection are also discussed in this course. The theories of material failure in isolating high voltage equipment are described in general.
39	EE0042	3	Power Stability and Reliability	This course studies the stability of electric power for single and multi-engine machines based on rotor angles, voltages and frequencies. In addition, this course discusses reliability analysis in generating systems, transitional systems and electric power distribution systems.
40	EE0043	3	Power Transmission and Distribution	This subject will discuss the concepts and operations of the transmission and distribution system. This course will also discuss channel parameters. Channel capacitance. Model and type of channel, protection on transmission and distribution channels.
41	EE0044	2	Design of Electrical Machine	This course discusses the detailed construction of various electrical machines and learns the concepts of designing electric machines.
42	EE0045	2	Electrical Vehicle	This course provides knowledge about the development of electric vehicle technology both from the main driver to the control system. Students are expected to be able to apply the knowledge gained in this course to the minimum electric vehicle simulator in the software.

43	EE0046	2	Thermodynamics	In this course students learn various basic concepts of thermodynamics and their application in simple thermodynamic systems analysis, so that students are able and skilled to apply them to simple thermodynamic systems modeling and analysis. The subjects of this course include: basic concepts of thermodynamics and their application in simple thermodynamic systems analysis, covering topics: unit systems, basic concepts and concepts of thermodynamics, energy and the first laws of thermodynamics, simple compressible properties, ideal gas concepts , incompressible substances, energy analysis for regulating mass and regulating volume, entropy and the second law of thermodynamics, and their application to simple thermodynamic systems.
44	EE0047	3	Power Generation	This course is an elective course in the Electrical Engineering Study Program. In this course, discussion and understanding of course material is more focused on the analysis of electricity generation processes such as risk, operations and repairs, strategies to deal with changes that are needed in the future, and characteristics and problems of various plants such as hydro power plants (PLTA), thermal plants (PLTU) and nuclear plants (PLTN).
45	EE0048	2	Management and Energy Conservation	This course studies the principles in the management of electrical energy and audits of electrical energy use in various types of expenses according to applicable procedures and standards.

ELECTIVE COURSES
CONTROL SYSTEM ENGINEERING

No	Code	Credits	Subject	Description
46	EE0031	2	System Modelling	In this course will learn about mathematical, electrical, and mechanical system modeling, as a basis for designing various types of control systems. The subject matter of this course includes: concepts and functions of system modeling, mechanical system modeling, electrical system modeling, hydraulic system modeling.
47	EE0032	2	System Identification	In this course students learn about system identification and methods and their implementation using MATLAB. The main topics of this course are: model concept and identification of system identification procedure system, identification method: parameter estimation and subspace.
48	EE0033	2	Adaptive Control System	In this course students learn about the concept of adaptive regulation systems to how to design various kinds of adaptive controllers. The subject matter of this course includes: the concept of adaptive regulation systems, real time parameter estimation methods, self-tuning regulator methods, auto tuning PID, and fuzzy adaptive.
49	EE0034	2	Predictive Control System	In this course students learn about the concept of adaptive regulation systems to how to design various kinds of adaptive controllers.The subject matter of this course includes: the concept of adaptive regulation systems, real time parameter estimation methods, self-tuning regulator methods, auto tuning PID, and fuzzy adaptive.
50	EE0035	3	Digital Control System	In this course students learn about the concepts of digital regulation systems to how to design various kinds of digital controllers. Main discussion: the concept of digital regulation system, signal conversion and reconstruction,

				time domain analysis on discrete time systems, frequency domain analysis on discrete time systems, digital controller design: Compensator, PID, root locus, pole placement, state observer.
51	EE0036	3	Optimal Control System	In this course students learn about the concept of optimal regulation systems to how to design optimal controllers and their applications. Subject: the concept of optimal regulatory systems, Optimization Techniques, Linear Quadratic Regulators, Linear Quadratic Tracking, Optimal Control based on feedback output, State estimators, Robustness design, Optimal application control.
52	EE0037	2	Mechatronics	This course provides knowledge of the mechanical and electrical systems incorporated into one called the mechatronic system. Mechatronic systems can consist of sensors, actuators, controllers and control algorithms. Students are expected to understand and apply this mechatronic knowledge to industrial applications.
53	EE0038	2	Sensors and Actuators	This course studies the concepts of sensors and actuators, the types of sensors and actuators according to their respective uses. Introduction of the concept of sensors and actuators, human detector sensors, displacement, speed, acceleration, force, pressure, flow, humidity, light, temperature, as well as pneumatic and hydraulic motor actuators.
54	EE0039	2	Process Control System	In this course students learn about process control systems, process element characteristics and responses, as well as configuration feedback and feedforward process settings. Subject: introduction of process management systems, process mathematical models, model-based controllers, loop control, conceptual design of process control systems, design simulation systems, process settings, design

				implementation of process management systems
55	EE0051	3	Modern Control System	In this course students will learn various forms of state space, dynamic system mathematical modeling, analysis of system control and observability, system design and system stability analysis.
56	EE0052	2	Hydrolics and Pneumatic System	In this course students will learn about the basic principles of pneumatics and hydraulics and their applications. Students are also taught how to assemble and fix problems that exist in pneumatic and hydraulic circuits.
57	EE0053	2	Robotics	In this course students learn about the basic concepts of robotics and their development, work principles and robotics applications in the industrial world. At the end of this course students make a simple robot system design for certain applications.
58	EE0054	2	Real Time Control System	In this course student will learn about the basic concept of real-time system and expected to design controlling discret system.
59	EE0055	3	Multivariable Control System	in this course students learn about multivariable systems, characteristics, input-output coupling properties and how to handle them, difficulty controlling, tuning in multivariable systems.
60	EE0056	2	Industrial Informatics	In this course students learn about the basic concepts, communication systems and work methods of automation systems in the industry. In addition, students also learn about the development of automation equipment along with industrial equipment based on PLC, DCS, SCADA and HMI.
61	EE0057	2	Digital Image Processing	This course discusses the fundamental concepts of two-dimensional images and their benefits, how to improve digital images, and connect the theory and results of digital image processing.
62	EE0058	2	Stocastic Process	The Stochastic Modeling course is a fundamental material in the

			Computational Sciences study program in KK Modeling and Simulation. The material on Stochastic Modeling includes Poisson Process, Markov Chain and Queue Theory. Lectures are given to equip students to use the Stochastic Process to model relationships between random events in various fields of science such as engineering, natural and social sciences.

CHEMICAL ENGINEERING

FIRST YEAR SEMESTER (AUGUST-DECEMBER)

No	Code	Semester	Credits	Subject	Description
1	CE2105	3	2	Introduction to information Technology and Algorithm	This course provides basic skills regarding the development of information technology, computational thinking skills as a problem-solving technique, and procedural programming techniques in certain programming languages as their implementation. Lectures are conducted face-to-face as the delivery of material in class and lab work in the laboratory.
2	CE2101	3	3	Analytical Chemistry	This course will study about qualitative and quantitative technique of chemical analysis.
3	CE2102	3	3	Physical Chemistry	This course learns about the basics of thermodynamics, phase equilibrium, equilibrium of chemical reactions, and the introduction of quantum mechanics.
4	CE2103	3	3	Mass and Energy Balance	This course studies the basic principles of mass and energy equilibrium in a system.
5	CE2104	3	3	Thermodynamics 1	This course learns the basics of thermodynamics which includes energy transformation and equations to determine the conditions of pure fluid thermodynamics.
6	CE3101	5	3	Chemical Reaction Engineering I	The topics will be discussed in this course include application of chemical reaction techniques in life, Basic Principles of Chemical Reaction Engineering, Conversion and Reactor Sizing, Law of Reaction and

					Stoichiometry Rate, Isothermal Reactor, Design (batch, CSTR, PFR, PBR), Data Analysis of Batch Reactors, Plural reactions.
7	CE3102	5	1	Chemical Engineering Laboratory I	This course studies the application of the theory of fluid mechanics, heat transfer, the process of separation in the working of chemical engineering operations through practical work
8	CE3103	5	3	Separation Processes	Topics will be discussed in this course will include Binary and multicomponent mixture and Design and analysis of the separation process in the equilibrium system that will also include evaporation, drying , continuous gas-liquid separation (humidification , absorption), continuous steam-liquid separation (distillation), continuous liquid-liquid and solid-liquid separation (adsorption, liquid-liquid extraction, liquid-solid leaching , crystallization), separation using membranes and mechanical - physical separation (solid-liquid filtration, settling , sedimentation, centrifugal separation , and mechanical size reduction).
9	CE3104	5	3	Process Heat Transfer	This course studies the phenomenon of heat transfer and its application in evaluating and designing heat transfer units.
10	CE3105	5	3	Chemical Engineering Fluid Mechanics	The topics will be discussed in this course include description and properties of fluids, fluid statics and fluid flow, The principles of displacement and application of momentum, the

					basic equation of fluid flow (mass balance and continuity equation, energy balance and Bernoulli equation); Application of the Bernoulli equation for measurement of flow rate, Friction loss (friction loss) fluid flow through pipes, porous media, fluid transport devices (pumps, compressors, turbines); High speed gas flow; Movement of particles through fixed beds and fluidized and filtration beds;
11	CE3106	5	2	Chemical Engineering Economics	This course studies the basic economics of engineering to be used as a basis for decision making and feasibility studies of chemical plants
12	CE3107	5	2	Industrial Microbiology	This course provides a description of the basic concepts of microbiology design used in the bioprocess industry
13	CE3108	5	3	Numerical and Computational Methods in Chemical Engineering	This course will give the student ability to apply numerical methods and also compile computational programs to solve mathematical modeling / equations in chemical engineering also process data using numerical methods
14	CE4101	7	2	Internships	In this course students will do some work (study case) industry that related with chemical engineering. The students will get comprehensive knowledge about the processes & products. Also, the student will learn about equipment, and the organization and

					culture of the company that they choose.
15	CE4102	7	2	Petrochemical Process	In this course, students will design chemical plant. The student will apply the basic principles of process and factory design, mass and energy balance, flow diagram process, process and instrument diagrams, process synthesis and analysis, process simulations, network heat exchangers, process tool design and construction materials, factory utility systems, as well as technical economic analysts.
16	CE4103	7	4	Chemical Plant Design	In this course, students will learn about the basic principles of process and factory design, mass and energy balance, flow diagram process, process and instrument diagrams, process synthesis and analysis, process simulations, network heat exchangers, process tool design and construction materials, factory utility systems, as well as technical economic analysts.
17	CE4104	7	2	Petroleum Refining	This course studies the stages gas and petroleum stages in accordance with the obtained bait.
18	CE4105	7	3	Surface Operation and Production of Hydrocarbon	Topics will be discuss in this course include Description of duties and responsibilities as process and facilities engineers, The basic concept of facilities for surface production processes from oil and gas which generally includes wellheads , gathering systems , manifold systems , separators , oil storage , and pumps, Oil processing:

				separation, type and design of separation, dehydration and process water treatment, de-oiling, upstream gas processing : pressure reduction, gas dehydration, heavy hydrocarbon removal, contaminant removal, pressure evaluation (gas compression), downstream gas processing: contaminant removal, natural liquid recovery gas, liquid natural gas or liquid petroleum gas, Handling and support systems for oil and gas from wellheads to distribution, including piping and pipeline design; offshore loading; distribution network and terminal.

SECOND YEAR SEMESTER (JANUARY-MAY)

No	Code	Semester	Credits	Subject	Description
19	CE1201	2	2	Introduction to Chemical Engineering	This course learns about the general description of chemical engineering which includes: professional opportunities for chemical engineering graduates, basic principles of mass and energy balance as part of the basic tools of chemical engineering, examples and basic principles of chemical engineering operations, examples of chemical industry processes, and knowledge of relevant environmental issues.
20	CE2201	4	2	Statistics and Probabilistic	The topic will be included in this course are Introduction to statistics and its applications in engineering, descriptive statistics, basic concept of

					probability, probability distribution, distribution of discrete random variables, distribution of continuous random variables, sampling distribution, estimation, single and multiple sample hypothesis tests, inferential analysis and regression and correlation.
21	CE2202	4	3	Organic Chemistry	This course studies organic compounds (classification, properties and synthesis) and their application in everyday life.
22	CE2203	4	2	Process Engineering Drawing	Topics will be discussed in this course include, Image as a technical language, Standard technical drawing, Types of technical drawings, Anatomy of a technical drawing, Symbols in process engineering drawings, Process Flow Diagram (PFD), Piping & Instrumentation Diagram (P & ID), Isometric image, Plant Layout.
23	CE2204	4	3	Thermodynamics II	This course studies the first and second applications of thermodynamics law within the scope of chemical engineering related to the power production from the steam power plant and the gas refrigeration and liquefaction systems. This course also studies the equilibrium of compound phases in mixtures and equilibrium of chemical reactions with thermodynamic approaches.
24	CE2205	4	2	Materials and Corrosion Science	Topics will be discussed in this course include Introduction to material science, Mechanical, physical and chemical properties of metals, Ferrous metal materials: steel making, Fe phase diagram, nonferrous metal, Material strengthening, Non-metallic

					material and its application, principles of corrosion, types of corrosion, Corrosion testing, Corrosion prevention method, material selection.
25	E2206	4	2	Occupational Health and Safety and Environment	This course discusses various things about the management and implementation of occupational safety and health (K3) and the environmental aspects of various literature sources that discuss the basics of HSE.
26	CE2207	4	3	Transport Phenomena	In this course students will learn about Viscosity and Momentum Transfer Mechanism, Speed Distribution on Laminar Flow, The modifier equation for the Isothermal System, Speed Distribution on Turbulent Flow, Transfer of Interfaces in, Isothermal Systems : Friction Factors, Macroscopic Balance for the Isothermal Flow System, Thermal Conductivity and Energy Transfer Mechanism, Temperature Distribution of Solids and Laminar Flow, Modifier Equations for Non-isothermal Systems, Temperature Distribution in Turbulent Flow, Diffusivity and Mass Transfer Mechanism, Distribution of Concentrations in Solids and Laminar Flow, Modifier Equations for Multicomponent Systems, Concentration Distribution in Turbulent Flow.
27	CE3201	6	3	Chemical Reaction Engineering II	Topics will be discussed in this course include Overview of Chemical Reaction Technique I, the design of non-isothermal reactors is steady, the design of the state non-isothermal reactor was not steady, Biochemical

					reactions, Catalysis and catalytic reactors, Residence time distribution (non-ideal reactor)
28	CE3202	6	1	Chemical Engineering Laboratory II	This course studies the application of the theory of heat transfer, the process of separation, process control, and chemical reaction techniques in the workings of chemical engineering operations through practicum
29	CE3203	6	3	Process Control in Chemical Industry	This course will study the chemistry engineering aspect that related to analysis, design, and application system control to reach a safe chemical process with maintained production rate and product quality.
30	CE3204	6	4	Chemical Industry Equipment Design	Topic will be discussed in this course include Basic design of chemical industry equipment related to pressure vessels and heat exchangers in order to design and evaluate the basic size of chemical industry equipment, including design codes; Designing dimensions of short vessels, high vessels (in operation of internal pressure and external pressure); Designing buffer dimensions; Design of heat exchangers: double pipe, shell and tube (coolant, heater, condenser, condenser, vaporizer and desuperheater); and Selection of heat exchangers.
31	CE3205	6	3	Process Synthesis and Simulation	Topics will be discussed in this course include Steps in synthesis process, Mass balance and energy balance, Calculation of equipment design and economic evaluation, Designing and scheduling batch processes,

					General concept of simulation for process design, Heat and power integration, Design of azeotrope mixture distillation process.
32	CE3206	6	2	Chemical Plant Utility Systems	Topics will be discussed in this course include Introduction to chemical plant utility systems, the efficiency of utility use includes: fuel, compressed air, inert gas, water and air processes, Water treatment for industrial processes, thermal fluid system, boiler house, steam system distribution, Application and use of electricity in the utility system, Air and cooling water, refrigeration, fire protection, Pipework and Safety.
33	CE3207	6	2	Research Methodology and Seminar	This course is the initial stage of the individual research final project carried out under the supervision of the supervising lecturer. The results of the study were submitted both in writing in the form of research proposals and verbally in the seminar session.
34	CE3208	6	2	Chemical Engineering Project Management	The Chemical Industry Project Management Course is a course on the process of managing and optimizing resources, both human, time, money and other resources for the success of an industrial project.
35	CE4201	8	4	Final Project	This course is the final assignment of individual research carried out under the supervision of a supervisor. The results of the study were submitted both in writing in the form of thesis reports, and verbally in the final session in the form of presentations and discussions with examiners.

36	CO0011	8	2	Career Preparation Project Management	This course focuses on preparing students to face the world of work by providing provision for effective aspects of communication in the context of social interactions including organizational communication, interpersonal communication, group communication, and cross-cultural communication.

ELECTIVE COURSES

No	Code	Credits	Subject	Description
37	CE4021	3	Clean and Renewable Energy	This course studies the relationship between energy consumption and environmental impacts, sustainable energy scenarios in the future, and types of clean energy from renewable sources.
38	CE4022	3	Bioprocess Engineering	This course will discuss description of the basic concepts of bioreactor design utilized in many bioprocess industries as well as bio separating applications.
39	CE4023	3	Enzymatic Engineering	This course studies the basic principles of catalysis enzymes and fermentation technology accompanied by the application of scale-up bioreactors.
40	CE4024	3	Nanomaterial Technology	The nanomaterial engineering course examines material properties at the nanometer scale, engineering techniques and nanomaterial characterization, and nanomaterial applications
41	CE4025	3	Electrochemistry and Applications	Topics will be discussed in this course include various types of electroplating that exist in the industry as an effort to protect against corrosion, characteristics, working principles, materials, and configurations of various types of secondary batteries and battery applications on certain systems (electric & hybrid cars, electric grids, etc.)
42	CE4026	3	Advanced Catalysis	Topics will be discussed in this course include basic principles of catalysis, Methodology for developing catalysts, Catalyst material, Catalyst preparation

				method, Catalyst characterization method, Deactivation and regeneration of the catalyst, Catalyst in the chemical and petrochemical industries.
43	CE4027	3	Membrane Technology	This course will discuss about membrane types and membrane applications in industry
44	CE4028	3	Industrial Risk Management	This course will examine the techniques and methods in hazard analysis that are inherent in an industrial process.
45	CE4029	3	Industrial Waste Management	This course provides knowledge about the types of pollutants commonly produced by industrial processes: both in liquid, gas and solid waste; and the management process
46	CE4030	3	Combustion Technology	This course studies the process of combustion of fuel in the combustion chamber, the type of flame, and its applications used in industry

LOGISTICS ENGINEERING

FIRST YEAR SEMESTER (AUGUST-DECEMBER)

No	Code	Semester	Credits	Subject	Description
1	LG2101	3	2	Introduction to Logistics Engineering	This course provides students the fundamental knowledge of logistics engineering to prepare for the more advanced courses in the upcoming semesters. Students will be given the overview of logistics tools: operation research, transportation and distribution system, material handling and warehousing, and also the safety in logistics.
2	LG2102	3	3	Operational Research I	This course covers the following topics: problem formulation, linear programming solving using graphical and simplex methods, sensitivity analysis, integer linear programming methods, transportation and assignment problems.
3	LG2103	3	3	Logistics Planning and Control	This course studies concepts, techniques, and methods related to the planning and control of logistics systems in manufacturing systems which are preceded by the introduction of a customer service management model. The material in this lecture includes: production planning and control cycles, forecasting methods, aggregate production planning, preparation of master production schedules, material requirements planning, capacity planning, production control, track balance, scheduling, flow control and risk.
4	LG2104	3	2	Materials Science	In this course students get an overview of the classification,

					properties, fabrication process, utilization and advantages and limitations of materials, in relation to material handling, the use of logistics packaging materials and materials from the equipment used in the process of moving goods.
5	LG2105	3	3	Statistics in Logistics	In this course students learn about the concepts of inference statistics and their application in the science of Logistics Engineering.
6	LG3101	5	3	Procurement System	This course learns about the process of procurement of goods and services and management of the procurement process from the requirement planning to the completion of the contract.
7	LG3102	5	3	Transportation and Distribution System	This course provides an understanding of mathematical models in the planning of transportation and distribution systems, as well as the relationships between advanced theories and useful computer applications. This course introduces the concept of solving problems of exact modeling and compilation of algorithms and heuristics to solve existing problems.
8	LG3103	5	2	Material Handling	This course explains the importance of the role of material handling in supporting the smooth running of logistics activities.
9	LG3104	5	3	Logistics Facility Design	This course provides an understanding of determining the location of facilities and designing facility layout.
10	LG3105	5	2	Organizational Management for Logistics	The course provides students with comprehensive knowledge about designing an organization within logistics

					and supply chain industries, with particular reference to the fundamentals and alignment of strategic management, organizational structure and human resource management. Case studies will develop an understanding of the practical application of theoretical concepts.
11	LG3106	5	2	Logistic Infrastructure	This course explains the infrastructure that supports logistics activities. This course provides basic knowledge regarding infrastructure for transportation and distribution, including knowledge of seaport infrastructure, airports, depots, and stations. In addition, it also explains about warehousing infrastructure and information technology related infrastructure in the logistics sector.
12	LG3107	5	3	System Modelling	This course provides knowledge about systems thinking patterns and system concepts. In this course students learns how to capture problems thoroughly in the context of the system, determine system boundaries, identify problems, model complex problems into the hard system methodology and soft system methodology, test a model, and analyze results.
13	LG4101	7	2	Seminar of Logistics Engineering Profession	This course provides knowledge about industrial professionals in the field of Logistics Engineering through seminars by experts.
14	LG4102	7	2	Research Methodology	This course includes a discussion of research methodology and techniques

					for preparing scientific reports and presentations.
15	LG4103	7	3	Logistics System Design II	This course is a continuation of the I. Logistic System Design course. The course provides comprehensive understanding and ability in conducting design, planning, and business development in the field of logistics.
16	LG4104	7	3	Logistics Quality	This course learns about the concepts of quality and management and quality assurance in the logistics system.
17	LG0001	7	2	Internship	In this course students do practical work in agencies or companies or industries that are engaged in logistics and supply chains.

SECOND YEAR SEMESTER (AUGUST-DECEMBER)

No	Code	Semester	Credits	Subject	Description
18	LG1201	2	3	Probability and Statistics	This course will learn about descriptive statistical concepts and probability theory in their use in the science of Logistics Engineering.
19	LG2201	4	2	Warehouse System	This course provides an overview and thorough understanding of the principles and operational approaches in the design of warehousing systems. In addition, warehouse performance appraisal is introduced, both methods and activities that can be carried out to improve the warehouse performance. This course also discusses the technology and information systems used in warehousing activities.

20	LG2202	4	3	Inventory System	This course studies models in inventory management. The topics in this courseincluded: inventory management, inventory forecasting and planning, inventory models, service level and filling speed, the concept of reorder points and reorder levels, quantity discounts, ABC analysis, lot sizing, lead time management, multi echelon inventory systems , multi-item inventory systems, and vendor management inventory (VMI).
21	LG2203	4	2	Analysis and Estimation of Logistics Costs (ANEBIL)	This course studies assessment and analysis of company performance based on the financial statements produced. In this course we learn about: the cycle of industrial activity, cycles and accounting systems, inventory calculation and valuation methods, cost and behavior concepts, job order costing, process financing, activity based financing, cost estimation, profit planning and control, and corporate financial analysis.
22	LG2204	4	2	Packaging in logistics	This course explains the concept of product packaging in logistics. Students are provided with knowledge of the types of materials for packaging such as plastic, metal and paper. Students are also equipped with knowledge about packaging for food products. As an enrichment, it will be explained about special treatment for material handling in the transportation process. The lecture is completed with class project work.
23	LG2205	4	3	Operation Research II	This course is a continuation of Operational Research 1. This course uses mathematical models

					both deterministic and stochastic, depending on the character of the system being modeled. The deterministic model studied in this course is advanced, in contrast to the basic Operational Research I subject. Software tools are also used to complete case studies as supporting tools to enhance students' understanding of the topics.
24	LG2206	4	2	Third Party Logistics	This course describes the services of logistics service providers where companies outsource logistics to third parties as logistics service providers, in order to focus on their core business or other more important aspects of the company.
25	LG2207	4	2	Health, Safety, Security and Environment	This course provides an understanding about identification of work risks in the field of logistics.
26	LG3201	6	3	Maritime Logistics	The maritime industry continues to develop and adapt to the fast-changing global technology and economy. The integrated demand for maritime transport to the context of global logistics brings a new concept called "maritime logistics". This course provides a comprehensive knowledge about maritime logistics process in a logistics system. The roles of each of the maritime logistics main players, such as, shipping industry, port and freight forwarder will be described, in particular within its operational and management context.
27	LG3202	6	2	Engineering Economics	This course explains the concept of time value of money and its use to evaluate and analyze engineering decisions.
28	LG3203	6	3	Design of Logistics	This course explains the basic concepts of information systems

				Information Systems	and their design to improve system management performance.
29	LG3204	6	3	Simulation of Logistics System	Simulation of Logistics System is one of the tools for decision making if a system that is observed has a high risk, requires large costs, or requires a long time. This course focuses on developing discrete models, and making alternative scenarios to get the best solutions. Some complex systems that are used as discrete event simulation studies in this course are about logistics and supply chains.
30	LG3205	6	3	Logistics System Design I	This course is an integration of several previously taught subjects such as Logistics Planning and Control, Logistics Facility Design, Distribution and Transportation Systems, and Logistics Information Systems.
31	LG3206	6	2	Project Management	This course provides an overview of the planning, scheduling, organizing and controlling of projects such as the construction of logistics infrastructure, improvement of information systems, development of new business in the world of logistics and other important activities.
32	LG3207	6	3	Supply Chain Management	This course studies the basic concepts of supply chain management along with supporting aspects which include: (1) Push and pull systems; (2) Strategy for alliances and cooperation; (3) Inventory management in the supply chain; (4) The concept of risk pooling; (5) Planning and designing logistics networks; (6) Bullwhip effect; (7) Supply chain integration; (8) Channel structure; (9) Design of supply

					chain strategies; (10) Management of costs and revenues.
33	LG4201	8	2	Legal Aspects in Logistics	In this course students will study the introduction of legal, regulatory and ethical aspects related to logistics activities, including: international and national trade law, transportation law, logistics and freight forwarding, customs law and insurance law.
34	LG0002	8	5	Bachelor's Thesis	The Bachelor's Thesis is the final process of student learning at the undergraduate level. In this course, students conduct a study that aims to solve problems with guidance from the lecturers and document them in the form of final project reports.

ELECTIVE COURSES

No	Code	Credits	Subject	Description
35	LG0003	3	Revenue Management	This course will study the pattern and factors of demand, the relationship between price and number of requests, forecasting methods, distribution channel strategies, and appropriate pricing strategies to maximize profits.
36	LG0004	3	Logistics Risk Management	This course provides management of risk in the implementation of logistics activities from a variety of perspectives, namely planners of logistics, implementing and consumer activities.
37	LG0005	3	Urban Logistics	This course discusses methods that can be used and things that must be considered in designing and solving logistical system problems in urban areas.
38	LG0006	3	Metaheuristic	This course teaches the search method for optimal value using the metaheuristic method.
39	LG0007	3	Data Mining	This course will learn about the process of processing data into valuable information

				through data mining methods such as association rules, classification, and clustering.
40	LG0009	3	Sustainable Logistics	This course studies the latest issues related to sustainable logistics and its relation to environmental, economic and social issues both locally and globally.
41	LG0010	3	Technology-Based Entrepreneurship	This course studies the analysis of the company's business activities, company information systems and their benefits, corporate modeling concepts, business plan concepts and plans, market analysis & planning, business ethics, legal regulations, financial & social responsibility plans, risk analysis and portfolios, and business development and corporate strategy. This course is also equipped with knowledge about the progress of information technology in relation to information technology-based business opportunities.
42	LG0011	3	Maintenance of Facilities and Logistics Equipment	This course studies the management system for maintenance activities for facilities and machinery tools used in logistics and supply chain activities.
43	LG0012	3	Port Management and Operations	The course of Port Operations provides an understanding of the meaning and function of sea ports in the supply chain system.
44	LG0013	3	Oil and Gas Logistics	This course explains the selection of oil and gas storage, distribution methods and the factors that must be considered in the optimal oil and gas industry logistics process.
45	LG0014	3	Global Logistics	This course studies the design and management of logistics systems in a global / international scope.

MECHANICAL ENGINEERING

Mechanical Engineering Course
First Year Semester
(August – December)

No	Code	Credits	Subject	Description
1	ME1101	3	Engineering Drawing	This course studies objects' shapes and size correctly. The students are not only able to visualize the object from types of lines, dimensions, scale, type of projection etc., based on ISO Standards
2	ME2101	3	Probability and Statistics	This course studies probability and statistics concepts and its implementation on engineering stream.
3	ME2102	3	Thermodynamics I	This course aims to provide an understanding of the basic concepts of thermodynamics and its application in the analysis, so that students are able to apply them for modelling and analysis of simple thermodynamic systems.
4	ME2103	2	Engineering Materials	This course discusses about engineering materials in mechanical engineering. students will be introduced to the concept of atomic structures, crystal structures, metal and non-metal materials, fabrication process, phase diagram, solidification, heat treatment, mechanical properties of materials, plastic deformations, materials testing, failure of materials, and degradation of materials.
5	ME2104	4	Kinematics and Dynamics	This course studies basic theory of mechanism, velocity and acceleration analysis, principal of static and dynamic forces, balancing theory, gyroscope and flywheel
6	ME2105	3	Statics	This course studies overview the capacity required to understand the knowledge of the physical and mathematical principles of mechanics; the ability to visualize physical configurations in terms of real materials, actual constraints, and the practical limitations which govern the behavior of machines and structures.

7	ME3101	3	Heat Transfer	This course provides the fundamentals of heat transfer knowledge and its application to a simple heat transfer system. The materials covered heat transfer analysis methodology, material thermal properties, conduction (including steady one-dimensional conduction, conduction with heat generation, heat transfer to fins, transient conduction), convection (including boundary layer, laminar flow And turbulent, convection equations), and radiation (including the process and properties of radiation, as well as the exchange of radiation between the various surfaces).
8	ME3102	3	Machine Element I	This course studies design, integration and best practices for use of machine elements such as bearings, springs, gears, cams and mechanisms.
9	ME3103	3	Motor Generator (lab work)	This course discusses the type of electrical machine, the working principle of the electric machine while working as a generator and motor, electrical machine operation, equivalent circuit analysis, power flow analysis, and testing to determine the parameters of the electrical circuit model.
10	ME3104	3	Manufacturing Processes I (Lab work)	This course discusses the manufacturing process in industry using conventional machines. Topics discussed include metal casting, metal forming, machining / metalworking, machining operations using traditional machines, such as lathe, frais, drill, scrap, as well as grinding processes and other abrasive machining.
11	ME3105	2	Mechanical Vibration	This course provides knowledge of the mechanical vibration basics of vibration classification, the unstoppable vibration of one degree of freedom, the muffled freedom, the forced vibration of one degree of freedom, the transient vibration, and the vibration of two degrees of freedom. After taking this lecture, students are expected to understand about the phenomenon of vibration, personal frequency, resonance phenomenon, and working principle of vibration sensor.

12	ME3106	2	Fluid Mechanics II	This course discusses the advanced aspects of the course of Fluid Mechanics I and its application. The material covered includes: dimensional analysis, general characteristics of external flow, concepts and analysis of lift and drag, boundary layer theory, potential flow, and compressible flow analysis (including ideal gas, Mach number and sound speed, isentropic and non-isentropic flow analysis in channel). After taking this lecture, students are expected to master and be able to apply the concepts of fluid mechanics in solving real (viscous) and / or compressible fluid flow problems in various engineering applications
13	ME3107	3	Numerical Method (Lab Work)	This course discusses various methods of solving mathematical problems encountered in the field of mechanical engineering numerically. Materials covered include: Approximation and rounding errors, Taylor slashing and Taylor series, Counting equation roots, Optimization Methods, Regression and Interpolation functions, Matrices and Systems of Linear Equations, Differentiation and Numerical Integration, Equal and Partial Differential Equations.
14	ME0003	2	Engineering Economics	This course generally introduces how to make a decision if there are several technical design alternatives and investment plans that are technically considered to meet the requirements. In addition, this course studies engineering economics scopes and its relation to engineering decision making process, cash flow, value equivalence (present, annual and future), gradient analysis, rate of return (benefit cost ratio analysis, NPV Analysis, IRR Analysis, Payback period, sensitivity and break-even analysis), depreciation, and replacement analysis.
15	ME0004	3	Maintenance Management and Engineering	This course studies maintenance concepts including reliability, availability and maintainability, Maintenance strategies, failure analysis, maintenance planning and scheduling, maintenance organization, condition monitoring, Total Productive Maintenance (TPM) and its implementation, effectivity measurement for TPM, Reliability based maintenance and its development
16	ME4101	3	Mechanical Design Project	This course discusses various concepts that have been studied in the field of mechanical engineering, to be used in solving a problem.

17	ME4102	3	Mechatronics	This course deals with the concept of mechatronics, sensor components, actuators, signal conditioners, controllers, pneumatic and hydraulic as well as examples and working principles of various mechatronic devices.
18	ME0005	2	Health and Safety at Work	This course studies Introduction to Regulation and Standards; Risk Perception, Assessment and Management; Types of Hazards in the workplace; Hazard Communication to Employees; Personal Protective Equipment (PPE): Types of PPE and Selection of PPE; Safety Communication, Incident and Emergency Planning and Safety Communication.
19	ME0006	2	Project Management	This course studies project management fundamental concepts which cover activities and processes in designing a project, carry out a project planning, projects' monitoring and supervision as well as understanding in some steps to establish a project.

Mechanical Engineering Course
Second Year Semester
(January – May)

No	Code	Credits	Subject	Description
20	ME2201	3	Material Strength and Mechanics	This course studies the stresses in materials under various types of loadings and its effects to the strength and deformations.
21	ME2202	3	Fluid Mechanics 1	This subject deals with basic concepts of fluid mechanics and its applications in the analysis of simple fluid mechanics systems. Application of the basic concepts enable students to analyze basic fluid mechanic system.
22	ME2203	3	Thermodynamics II	This course is a continuation of Thermodynamics I which includes exergy analysis, steam power system, gas power system, refrigeration systems and thermal pumps, thermodynamics property relation, gas mixture and psycometric application, chemical reacting mixture and combustion.

23	ME2204	3	Mechanical Drawing	This course is the continuation of Engineering Drawing, which serves as a basic of ability and expertise of Mechanical Engineering graduates in understanding mechanical drawing.
24	ME0001	2	Measurement and Industrial Metrology	This course discusses the basics of geometry measurement, especially for manufacturing purposes. This course covered tool classification and geometric measurement; Aspects of precision, accuracy, precision and statistical analysis; Linear measurements, angles and flatness; Thread metrology; 12Gear metrology; Roundness measurement & form error. Quality control technology: basic probability statistics, qualitative and quantitative control charts and sampling techniques.
25	ME3201	3	Machine Element II	This course continues Machine Element 1 course on studies of the design, integration and best practice for use of machine elements, such as gears, shafts, clutches and brakes.
26	ME3202	3	Energy Conversion Machine	Providing knowledge about energy and energy sources; type and classification of energy; basic concepts of energy conversion systems; classification of energy conversion system; fuel in energy conversion; classification of combustion motor; the main components, working principal and operational charactercistics of several energy conversion engine including internal combustion engine; external combustion engine, fluid machinery, refrigeration and air conditioning system and other non converntional energy conversion system
27	ME3203	3	Manufacturing Process II	This course discusses manufacturing processes in industries using non-conventional machines. Topics discussed covered the process of welding, non-conventional machines, powder metallurgy, surface treatment, CAD / CAM, and rapid prototyping
28	ME3204	3	System Dynamics and Control	Introduction to Control Systems, Functions Laplace transform, Analysis Stability System, Analysis Root Locus, Modeling Mathematical Of System Dynamic, Block Diagram and graph flow Signal, Analysis Response transient, Designing with Root Locus, Frequency response Analysis, Design of control Systems with frequency response, PID control

29	ME0002	3	Rotating Equipment	This course discusses the concepts and workings principle of pump and compressor including mechanical motion (straight back and rotary motion), pump classification, calculation of installation, pump performance (series and parallel) of the pump or compressor so that able to choose, design and determine the installation of pumps or Compressor as needed.

Mechanical Engineering Elective Course

No	Code	Credits	Subject	Description
30	ME4021	2	Energy Audit and Management	This course provide knowledge about energy auditing including energy system planning, energy policy development, pre and post deployment system auditing, energy savings and cost reduction strategies for residential, commercial, or industrial buildings, communities and businesses.
31	ME4024	2	Energy Storage Technology	This course studies about different types of energy storage technology and develop systematic knowledge and understanding of the role of energy storage for the exploitation of renewable energy resources. The course will cover operating principles, characterization methods, economic comparison, advantages/issues of each and current development of energy storage.
32	ME4205	2	Internal Combustion Engine	This course studies the fundamentals of how the design and operation of internal combustion engines affect their performance, operation, fuel requirements, and environmental impact. Topics include fluid flow, thermodynamics, combustion, heat transfer and friction phenomena, and fuel properties, with reference to engine power, efficiency, and emissions. Students examine the design features and operating characteristics of different types of internal combustion engines.

33	ME4022	2	Solar Energy Engineering	This course provide knowledge about solar energy systems focusing on overview of solar energy collection and conversion systems, basics of photovoltaic, crystalline PV technologies, Thin-Film PV technologies, PV systems, battery storage and smart grid, economic analysis and current development of photovoltaic.
34	ME4023	2	Wind & Hydro Energy Engineering	This course studies general insight of wind and hydro energy technology. The student will learn the fundamental of wind and hydro energy such as resource measurements and assessment, dynamics of fluid flow, turbine technology, structural mechanics, materials, financial and electrical systems.
35	ME4034	2	Metal Joining (Welding)	This course is designed to provide comprehension about the methods and procedures of metal joining in order to obtain a product with the good quality of metal joining.
36	ME4033	2	Corrosion and its prevention	This course discusses the principles of electrochemistry and corrosion, and the type of corrosion form, methods of corrosion control such as coating, anode and cathode protection and inhibitors.
37	ME4031	2	Physical Metallurgy	This course provides knowledge about the crystal structure, crystal defect and its effect on the materials properties, failure mechanisms on materials such as fatique and creep.
38	ME4032	2	Finite Element Method	In this course, a basic concept of a computational method to calculate stress and deformation in a structure is introduced, starting from axial bar, beam, trusses and frame, and simple 2-D cases.
39	ME4051	2	Introduction to Nanoscience and Nanotechnology	This course overviews the knowledge of basic elements in nanoscience and nanotechnology, the nature of its inter- and multidisciplinary science and engineering, and its potential applications.
40	ME4042	2	Product Design and Development	This course studies the knowledge to design and develop a product in industries. The topics cover the opportunity and customer needs identification; product specification; concept generation, selection and evaluation; product architecture; communicating ideas in sketches; detailing sketches into 2D technical drawing; design feasibility analysis from the company point of view; prototyping fabrication and evaluation; production ramp-up.

41	ME4041	2	Reverse Engineering	Reverse Engineering (RE) has become an important engineering task to obtain knowledge about engineering device or system. RE is an effective learning technique if other "solutions" are available on the market. Applying RE methodology allows engineers to disassemble and re-assemble of the device, taking care to document, test, analyse, and report on the study of its function. This course is introduces students to Reverse Engineering Methodology through practical projects
42	ME4035	2	Manufacturing Management	This course studies the introduction to operations and production management, production forecasting, capacity planning and inventory control (material requirement planning, just-in-time, scheduling and control, inventory management), process planning (facility layout and planning, waiting lines) as well as quality control and management.
43	ME4051	2	Risk Management and Analysis	This course studies Concepts of risk management, risk measurements, probabilistic methods, Fault Tree Analysis, Event Tree Analysis, hazard identification, introduction to hazard operability, Accident Causation Investigation, and Introduction to Safety Integrity Levels.
44	ME4024	2	Oil and Gas Production System	This course studies Field development and project organization, offshore vessels and production facilities, introduction to drilling process and well finishing, upstream processing, essential personnel and roles in a system, and safety systems in oil and gas production system.

*PS : Terms and Condition applied for elective course

FACULTY OF EXPLORATION AND PRODUCTION TECHNOLOGY

GEOPHYSICAL ENGINEERING

FIRST YEAR SEMESTER (AUGUST-DECEMBER)

No	Code	Semester	Credits	Subject	Description
1	CH1101	1	3	Chemistry I	This course studies the basic and fundamental concepts chemistry. Topics covered in this course include Introduction to Chemistry, the Nature of Materials (Atoms, Compounds and Molecules) and the Nature of Periodic Tables, Moles and Stoichiometry, Molecular Reactions in the Liquid Phase, Oxidation-Reduction (Redox), Energy and Chemical Changes , Atomic Quantum Mechanics, Basics of Chemical Bonds, Bonding Theory and Structure, Gas Properties, and Intermolecular Tensile Strengths and Properties of Liquids and Solids.
2	GP2101	3	2	Introduction to Geophysics	This course studies the concepts of Plate tectonics and Geodynamics as basis for understanding earth crust and mantle. This course also focuses on briefly explaining the concepts of Geophysical methods, such as : Seismic, gravity, geomagnetics, geoelectrical, and geo-electromagnetics and its application in subsurface investigation.
3	GP2102	3	3	Waves in Geophysics	This course discusses about the theory of seismic and electromagnetics waves. Topics covered in this course spans around the definition of seismic and electromagnetic waves, the mathematical equation, types of waves, the

					physical properties of the earth that are influenced by those waves.
4	GP2103	3	4	Computing Methods	This course discusses the introduces the concepts of algorithms and the basics of programming which lays the foundation of Computational Geophysics. The Phyton basic programming language will be introduced in this lecture and will be utilized later in more advanced Geophysical courses. The topics covers the Concept of Programming, Flow Charts, Data Types, Control Flow, Matrices, vectors, and their operations in Python, Function, Procedure, and Scripting. At the end of the course, participants are required to create a simple Geophysics related program.
5	GL2001	3	5	Sedimentology and Stratigraphy	This course provides basic knowledge about sedimentology and stratigraphic principles. This course also provides concepts and terminology that will be used in the branches of Geology to be applied in petroleum engineering and Geophysical techniques. The course covers history, development and scope of sedimentology and stratigraphic learning, sediments and clastic and non-clastic sedimentary rocks, the process of transporting and deposition of clastic sediments, their sedimentary structures, the introduction of facies and depositional environments, glacial knowledge of various

					depositional environments , aeolian / desert, river / fluvial, alluvial fan, lake, delta, coast, estuary, shallow sea, deep sea, to environment associated with volcanic activity, post-deposition structure and diagenesis in sedimentary rocks, stratigraphic basic concept (lithostatigraphy, biostratigraphy , and chronostratigraphy), explanation of stratigraphy and introduction of subsurface sedimentology and understanding of factors that influence regional sedimentation processes."
6	GL2002	3	6	Petrology and Mineralogy	Mineralogy and Petrology course introduces the rock-forming minerals, and all types of rocks including igneous rocks, sedimentary rocks, metamorphic rocks, and alteration rocks. This course also will discuss the character, texture, and types of minerals that are commonly found and the process of formation is associated with the Geological and tectonic conditions. The study will include mineralogy and Mineral Chemistry, Physical Property of Minerals, Mineral Classification, Association of Minerals in Frozen Rocks, Pyroclastic Rocks, Sedimentary Rocks, and Metamorphic Rocks, Rock Petrology."
7	GL2109	3	7	Introduction to Exploration and Energy Poduction	This course discusses the cycle of energy exploration and production activities which is focused on the oil / gas and Geothermal fields, as well as

					technical explanations of each profession roles (geologist, geophysicist, and reservoir / production engineer). The class will taught in english and use case studies like interpretation of Geological and Geophysical data to determine the potential of hydrocarbons or Geothermal in an area and the design of exploration and production of these natural resources.
8	GP3101	5	1	Geophysics Signal Analysis	This course discusses the concepts and application of signal processing and analysis in solving Geophyscial problem. Students will learn about continuous and Discrete Fourier transforms, Sample Theorem, Filters, Convolution and Correlation, Deconvolution, Prewhitening, Non-stationary Signal Analysis (Short-Time Fourier Transform, Continuous Wavelet Transform, etc.)
9	GP3102	5	2	Geodynamics	This course discusses about the dynamic processes of the earth and its interior strutures through mathematical, Geological, and Geophysical approach. Students will learn about subduction, mantle convection, earth pressure and temperature, plate driving force, mantle and core support, hot spots, seismic tomography, tectonics and the distribution of mineral, and hydrocarbon resources.
10	GP3103	5	3	Geoelectrical and Electromagnetics	This lecture introduces geoelectric and electromagnetic methods in mapping conditions below the surface to various earth

					applications. Topics to be discussed in this lecture include electrical properties (resistivity and permittivity) and earth material susceptibility, geoelectric and EM roles in Geophysics, DC geoelectric methods, electrode configurations, vertical electrical sounding (VES) and profiling techniques , horizontal layered earth model (1-D), induced polarization (IP) method, chargeability and metal factor, self-potential (SP) method, Maxwell equation, EM wave equation, magnetotelluric method (MT), controlled-source audio method- magnetotelluric frequency (CSAMT), Transient EM (TEM) method, very low frequency EM (VLF-EM) method, ground probing radar (GPR) method.
11	GP3104	5	4	Acquisition & Processing of Seismic reflection Data	This lecture will discuss the principles of physics relating to seismic reflection methods, seismic reflection data acquisition, understanding of seismic signals, and seismic reflection data processing activities; both Pre-Procssing activities such as static correction and velocity analysis and de-noising and Migration activities. Students will have a hands - on experience on processing real seismic data.
12	GP3105	5	5	Gravity and Magnetic Method	Student will be introduced to the basic concepts, acquisition, processing and interpretation of gravity and geomagnetics data. This course covers the concept of

					gravity and geomagnetics measurement, the principle of gravimeter and magnetometer, survey design and procedures for acquisition, reduction and processing of gravity and magnetic data, inversion and interpretation of gravity and magnetic data.
13	GP3106	5	6	Geomatics in Geophysics	This course assists students in understanding the concept and application of positioning and mapping prior to conducting a Geophysical survey.
14	GL3101	5	7	Petroleum Geology for Geophysics	This course discusses about the concept of petroleum system and how to identify those petroleum systems in Geological / Geophysical data.
15	GP4101	7	1	Seismic Inversion and Atribute	This course will discuss the uses of attributes and seismic inversions, basic concepts, and the processes needed. The seismic attributes part of the course spans from the discussion of amplitude, time, horizon, and frequency attributes. In addition, the seismic inversion part will covers the basic concepts of seismic inversion by relating them to Inversion Theory Subjects. The inversion methods that will be discussed are: colored- inversion, model-based inversion, sparse-spike inversion, and sparse-layer inversion, and the application of the methods to the post-stack and pre-stack data.
16	GP4104	7	4	Scientific Writing and Presentation Techniques	This course is designed to help students build expertise to produce clear and effective scientific papers. In addition, this course also provides provisions for students to be

					able to build a good scientific presentation through practice, self-evaluation, and feedback. This course will focus on: the basic principles of good scientific writing, preparing presentation slides, answering difficult questions, explaining technical details, and presenting to general listeners.
17	GP4103	7	3	Integrated Exploration and Field Development	This course is like a mini-thesis where students are able to apply their newly-gained skills in seismic data analysis and formation evaluation to a real exploration and field development issues.
18	GP4102	7	2	Geophysics Engineering and Environment	This course studies the application of Geophysical methods in the fields of Geotechnical and Environmental issues.

SECOND YEAR SEMESTER (JANUARY-MAY)

No	Code	Semester	Credits	Subject	Description
19	GL1201	2	5	Physical Geology	This course is a basic Geological subject that is required for all Exploration and Production Technology (FTEP) students. In this lecture students will be introduced to Geological objects, Geological theories / basic principles and basic Geological methodologies. Some of the principles described in this lecture includes plate tectonic processes, the formation and type of minerals and rocks, the basis of sedimentology and stratigraphy, environmental Geology, Geological disaster mitigation, the concept of Geological time,

					and so on. A 3-day field lecture is required for participants of this course.
20	CH1202	2	6	Chemistry II	This course is the continuation of chemistry I and mandatory for every science and engineering majors. Topics covered in this course includes : Thermodynamics, Molecular Solution, Physical properties of solution, Kinetics, Organic Chemistry, and Electrochemistry
21	GP2201	4	2	Potential Theory	This course studies and calculates terrain from simple sources at observation points and translates measured fields into the shape and nature of field sources in Geophysical methods such as gravity, magnetic, geoelectric, and electromagnetic fields.
22	GP2202	4	3	Numerical Method	The course discusses numerical methods as well as the basic formulas used to solve numerical problems. This lecture also discusses the implementation of numerical methods using the programming language. Topic covered in this course are Error, Taylor series, Smoothing and Interpolation, Optimization, Linear algebraic Equations, Integral and differential, Partial Differential Equation-Finite Difference, Ordinary Differential Equation
23	GP2203	4	4	Electronics & Geophysical Instrumentation	This course is designed to introduce the concept of electrical circuits, types and characteristics of electronics, basic configuration of instrumentation, concepts and developments in electronics and Geophysical instrumentation with purpose to provide an understanding of how a Geophysical instrument works.

					Student will learn about Ohm's law, Kirchhoff's law, analysis of electrical circuit nodes and nodes, Thevenin-Norton theorem, order of 1st and 2nd order RLCs, functions of linear system switching, RC filter modeling, polishing & zeros, Geophysical Instrumentation & Sensor Configuration, Analog to Digital Coneverter , correction of instrumentation in seismology.
24	GP2204	4	5	Seismic Refraction	This course will discuss about basic concepts in seismic wave propagation, seismic wave behavior at the layer boundary, acquisition and analysis of seismic refraction waves on investigations near the surface. Furthermore, the course also discusses about Near-surface Geophysics, The concept of stresses, Hooke's Law, Elastic Modulus, Wave propagation, Seismic Wave Types, Seismic Wave Speed, Raypath Geometry in Layered Medium, Seismic Wave Characteristics, Seismic Wave Recording and Source Instruments, Refraction Seismic Survey, Processing Refraction, Processing and Interpretation Seismic Refraction Data, Surface Waves, Applications and Case Studies on the application of Seismic Wave Refraction and Surface Waves in near surface investigations.
25	GP2205	4	6	Seismology	This course discusses about earthquakes and their parameters. The topics covered are Seismic waves, seismographs, seismograms, seismological networks, hypocenter, focal mechanism, magnitude, energy, intensity, earthquake static,

					seismotonic, microseismic and its application. By mid-semester, participant of this course will have an opportunity to visit the Indonesian Tsunami Early-Warning System (INA-Tews) hosted by The Bureau of Meteorology, Climatology, and Geophysics
26	GL2209	4	7	Structural Geology	This course introduces the basic principles of Structural Geology how are those principles applied in solving subsurface problem. The topics covered in this course are : Deformation, strain and kinematic analysis, stress analysis and dynamics, fractures and faults, brittle deformati and ductile, folds, foliation, lineage, plate tectonics and structural Geology, contractional, extensional and strike-slip and boudin regimes, Structural Geology for Geological resources.
27	GP3201	6	1	Science and Geothermal Technology	This lecture introduces Geothermal systems in the world, especially Indonesia, both in general and in terms of Geoscience, technology and direct use of Geothermal energy. Topics to be discussed in this lecture include Geothermal systems which include Geothermal Geology, volcanology, rock types and physical properties of rocks, Geothermal manifestations, exploration of Geothermal geochemistry, basis of Geological mapping, Geothermal exploration, Geothermal potential in Indonesia, Geothermal monitoring with methods Geophysics, calculation

					/ determination of Geothermal reserves. Geothermal technology includes the introduction of Geothermal production technology, direct use of Geothermal energy, and case studies of Geothermal industries around the world, including indonesia.
28	GP3202	6	2	Inversion Theory	This lecture provides the concept of inversion theory and its application in solving Geophysical problems. This course discusses about parameter model estimation, linear and nonlinear inversion methods and their solutions, the use of a priori information, and the use of damping parameters.
29	GP3203	6	3	Geophysical Field Camp	In this course, students will apply Geophysical methods to solve real problem in the field. Students will design surveys, acquire, process, and interpret Geophysical data to investigate a real problem observed in the research area. Students will spend approximately 10 days in the field.
30	GP3204	6	4	Interpretation of Seismic Reflection Data	This course discusses about the concepts and methods in interpreting seismic data. Students will have a hands - on experience on conducting 2D / 3D seismic data interpretation using both color pencils and commercial softwares.
31	GP3205	6	5	Geophysical Project Management	In this course, students will learn about budgeting, scheduling, managing project resources in order to be able to deliver the results on time and on budget. This course will invite speakers from the industry to talk about their experience in managing Geophysical projects.

32	GP3206	6	6	Geostatistics	This course is designed to help students understand the basic concepts of statistics, have the ability to analyze spatial data and their applications in Geophysics. This lecture discusses basic statistical concepts, data analysis, interpolation, spatial correlation, cross-correlation, visualization of spatial data, Krigging estimation methods, and applications in spatial Geophysical data.
33	GL3202	6	7	Formation Evaluation	This course discusses about the methods used in evaluating a formation. This includes methods to understand about the lithology of the reservoir, the type of hydrocarbon, and its porosity. Topics covered in this course includes : the concepts behind various logging data acqusition and values they bring, interpretation of logging data, understanding borehole environment, and evaluting formation using different methods.
34	GP4202	8	5	Senior's Final Project	In order to be able to graduate from the university, students are required to conduct a supervised research / experiment and write a report about it.
35	CO4001	8	2	Preparation for Entering the World of Work & Professional Ethics	This course focuses on preparing students to face the professional world by providing provision for effective aspects of communication in the context of social interactions including organizational communication, interpersonal communication, group communication, and cross-cultural communication.

ELECTIVE COURSES

No	Code	Credits	Subject	Description
31	GP4111	2	Geophysical Method in Geothermal Field Development	This course includes discussion of exploration strategies, subsurface anomalies in the Geothermal prospect area, Geophysical methods for Geothermal exploration, reservoir monitoring and case studies in various Geothermal fields.
32	GP4211	2	Geothermal Engineering	This lecture introduces students to all aspects concerning Geothermal engineering. Topics to be discussed in this lecture include heat and mass transfer and their application in Geothermal technology, Geothermal reservoir which includes integration of data analysis to determine reservoir type, reservoir simulation and modeling (TOUGH2 & Leapfrog), forecast and reservoir monitoring, well bore simulation , utilization of Geothermal energy, basic knowledge of Geothermal drilling, well testing, EGS, and direct use.
33	GP4112	2	Rock Physics	This lecture provides rock physics concepts and modeling methods. This course discusses about the relationship between physical properties of a rock and seismic parameters. The topics covered in this course are : Hooke's Law, elastic parameters, Effective Medium Theory, inclusion modeling, Gassmann substitution, AVO modeling, anisotropy, cross-plot analysis.
34	GP4212	2	Seismic stratigraphy	This lecture is a deeper discussion of the concept of seismic stratigraphy and the technique of interpreting seismic data reflection on stratigraphic traps in oil and gas exploration activities. Discussions in this course include: principles and concepts of stratigraphic seismic, sequence-stratigraphic expressions in a variety of different

				depositional environments, stratigraphic interpretation exercises on seismic reflection data.
35	GP4113	2	Geotomography	This lecture will discuss the concept of tomography in Geophysics to imaging the subsurface of the earth. The scope of the discussion includes tomography theory: model parametricization, ray-tracing method, formation and solution of tomographic equations, constraint applications, application of local and teleseismic, earthquakes (passive seismic tomography): travel-time, ambient noise, and attenuation tomography . At the end of the lecture, it will be filled with exercises for making simple tomography programs, and processing using real data.
36	GP3012	2	Natural Disaster Mitigation	This subject studies Geophysical methods that can be used to mitigate earthquakes, tsunamis, volcanoes, landslides, geotechnical disasters).
37	GP3212	2	Mining Geophysics	This lecture discusses about the application of Geophysical methods in a various mining activities or lifecycle of a mine.
38	GP4114	2	Capita Selecta	This course provide broader insights about the latest research or methods in Geophysical Science and Engineering, so students will be able to grasp on up-to-date topics for research and work in the field of Geophysics given by guest invited lecturers.
39	GP3211	2	Internship	This is the course where students are allowed to have a working experience in the industry.
40	GP4213	2	Borehole Geophysics	This course discusses about the seismic methodologies acquired in borehole environment, such as : VSP, cross - well tomography, checkshot, and sonic logging.
	CO4002	2	Public Engagement in the Science and Technology Project	Student will be taught about introduction of social science and society and how to identify stakeholders at various levels who have a large role in project activities. In this

			course, students will also learn about methods and ways of involving the public (local government and members and community groups) as important stakeholders who can support the success of project activities in a region. In addition to getting a practical understanding of how to plan and organize engagement activities; students will also be able to reflect the theories and contexts that support such engagement activities such as public models and audiences and reasons for involvement in a variety of different contexts and policies.
GP3111	2	Introduction to Geophysical Exploration	This course is aimed to Geological Engineering students to educate them about the concepts and application of various Geophysical Methods.
GP4014	2	Reservoir Geophysics	Reservoir Geophysics discusses about the techniques in characterizing reservoir using seismic methodologies, including : the application of seismic inversion and time - lapse monitoring.
GP3112		Introduction to Seismic Method	This course is mainly aimed for Geological Engineering students to educate them about the seismic data acquisition, processing, and interpretation techniques in oil and gas exploration.
GP3213	2	Layanan II - Geostatistics and Computation	This course is mainly aimed for Geological Engineering students to educate them about the concepts of statistics and spatial data analysis in Geoscience.

Notes: Elective courses will be held at 7/8 semester

GEOLOGICAL ENGINEERING

FIRST YEAR SEMESTER (AUGUST-DECEMBER)

No	Code	Semester	Credits	Subject	Description
1	CH1102	1	3	Basic chemistry I	This course learns about the fundamental or basic concepts in chemistry.
2	GL2101	3	2	General Geochemistry	The course learns about the importance of chemical elements in the geological context, the controlling factor for the distribution of chemical elements in the world within the geological time, the methods use to learn the distribution of chemical elements and its significance with related geological processes.
3	GL2102	3	4	Sedimentology and Stratigraphy	This course introduces sedimentology and stratigraphy including sedimentary processes and sedimentary environments as a background in concepts and terminology for more advance work in stratigraphy (e.g. sequence stratigraphy) and modelling. This course will explain different types of sedimentary rocks, processes of transport and sedimentary structures, sedimentary environments and facies, and stratigraphy concepts and its application.
4	GL2103	3	3	Paleontology	This course discusses basic principles of paleontology such as fossils and fossilization processes, morphology and ecology of an organism from various taxonomic levels, the role of fossils in the preparation of

					geological time scales, environmental`.
5	GL2104	3	2	Crystallography and Mineralogy	In this course, the phenomenon of volcanoes will be studied, analysis of the potential implications of volcanic activity and tourism will also be the subject of discussion.
6	GL2105	3	2	Volcanology	This course learns the process of volcanic formation, types of eruptions, and rock deposits formed in the process of volcanic eruptions. The process of magma formation, the morphology of the earth in volcanic regions, volcanic disaster mitigation, geothermal systems and geothermal potential in a volcanic complex will be learned too.
7	GL2107	3	3	Geographic Information System	This course discusses the application of geographic concepts, elements of geographic information systems, data structures, retrieval, processing and manipulation of data, digital remote sensing processes, remote sensing linkages and GIS applications for various fields.
8	GL2109	3	2	Introduction to Energy Exploration and Production	This course learns about the basic upstream and downstream industries in energy exploration and production. Although the focus of this course is on oil and gas and geothermal industries, other energy industries such as coal, mining, and new and renewable energy will also be discussed.

9	GL3101	5	3	Petroleum Geology	Oil and Gas Geology is a course that provides insight and capabilities related to the exploration and development of oil and gas fields. In this course, students are shown to read subsurface geological data and are required to make decisions on field exploration and development simulations.
10	GL3102	5	2	Geodynamics	This course studies endogenous processes and their implications on the surface deformation. This course also discusses the types of tectonic plate interactions, the process of deformation of the earth's crust, the process of forming the crust, the phenomena of seismicity.
11	GL3103	5	3	Petrography and optical mineralogy	This course focuses on identifying minerals based on their optical characteristics, describing rocks based on their microscopic characteristics and the practice of using polarizing microscopes as integral part of this course.
12	GL3105	5	3	Geomorphology	This course learns about the landscapes and its formation processes, both from endogenous and exogenous processes through field observations, topographic maps, aerial photographs and various visual or digital images.
13	GL3106	5	2	Historical Geology	This course discusses basic / philosophical understanding of the formation of the earth in the solar system and its development from the various basic concepts from Geosyncline, continental drift, to Plate Tectonics. This course includes also Earth's

					evolution, important events include geological processes and aspects of life in each geological period up to the Quaternary period.
14	GP3111	5	2	Introduction to Geophysical Exploration	This course will learn the geophysical concepts for geological exploration purposes. Exploration geophysical methods are including: Seismic Reflection Method, Refraction Seismic Method, Gravity Method (Gravity), Geomagnetic Method, Geoelectric Method and Electromagnetic Method.
15	GP3112	5	2	Introduction to the Seismic Method	This course will learn about seismic methods from the basic theory of seismic wave propagation, acquisition, processing, and interpretation of seismic reflection data. The focus of this course is providing an understanding of seismic methods in exploration and production activities to geology students
16	GL4101	7	2	Non-conventional Oil and Gas and Renewable Energy	This course discusses various types of non-conventional oil and gas reserves, new and renewable energy will be introduced with an emphasis on alternative energy including solar energy, biomass, marine energy, and wind power, as well as the best practices that have been used recently.
17	GL4102	7	3	Exploration Geology	This course describes how geologists develop strategies to solve geological problems like the basic concepts of geological exploration, scale dependent exploration, and exploration technology in various geological natural

					resources will be introduced. At the end of the course, students will work on a group project that contains planning for exploration and exploitation of a natural geological resource.
18	GL4103	7	2	Environmental Geology	Environmental geology learns about the relationship between geology and the activities of humans and other living things. Some topics related to this lecture include natural disasters, groundwater systems, their implications for humans, and land use.
19	GL4104	7	2	Energy and Mineral Regulations and Laws	Understanding the concept of a regulatory system based on a constitution that regulates natural wealth and legislation on aspects of mining natural resources, energy, water, forests, land, other geological aspects and problems in Indonesia.
20	GL4105	7	2	Energy Management and Economy	The Energy Management and Economics course is a final level course that integrates economics with geological exploration. The course provides a basic understanding for energy management and economics for mineral and oil and gas business in Indonesia.
21	GL4106	7	3	Integrated Exploration and Field Development Project	This course help students' ability to implement geological exploration knowledge in a multidisciplinary project. Students from different departments in Faculty of Exploration and Production Technology will work together in a group project.
22	GL4107	7	2	Independent Mapping	Independent mapping teaches students to do mapping

				planning and conduct geological mapping. At the end of the course students are required to do mapping independently in designated areas.

ELECTIVE COURSE
FIRST YEAR SEMESTER

No	Code	Semester	Credits	Subject	Description
23	GL2108	5	2	Geotourism	This course discusses geological potential for tourist attraction, development and promotion of geological aspects as tourism capital, constraints and problems related to geotourism. In addition, it will also discuss how to design geotourism activities.
24	GL3108	5	2	Carbonate Sedimentation	This course supports the interest in oil and gas, especially the discussion of carbonate rock reservoirs. Discussions in the first half of the lecture focused on carbonate facies types, facies associations, depositional environments, and mechanisms that control the growth of carbonate rocks. The next half of the lecture is the application of these theories in determining vertical and lateral variations (spatial and regional variations) to determine the depositional environment and examples of outcrops and subsurface data. Industry experts (geologists / geoscientists) are invited to the last three meetings to provide applications for interpretation of carbonate reservoirs.
25	GL3104	5	2	Coal Geology	This course discusses coal deposits from the geological aspects. Discussions include

					controlling factors in the formation of coal deposits and its distributions; coal quality parameters and their classification, coal exploration methods and geological modeling, coal resource / reserve classification, as well as the possibilities of coal use and its impact on the environment.
26	GL3111	7	2	Hydrothermal processes and Mineral Alteration	This course introduces hydrothermal processes and identifying alteration of rocks through polarizing microscopes. In addition to identification of alteration rocks, this course also contains an explanation of the 4-dimensional relationship between each alteration.
27	GL4109	7	2	Basin analysis	This course discusses basin genesis which includes the formation, filling and deformation of sedimentary basins in the world, plate tectonic theory and its relation between plate motion and basin formation, the origin of the occurrence of subsidence and its type and role in basin formation. The discussion also contains a classification of basins based on their position on the process and interaction of plates and the accompanying deformation and sedimentation and their relation to hydrocarbon deposits.
28	GL4108	7	2	Geomechanics and Geopressure	This course discusses the phenomenon of pressure and its effect on rocks and fluid flow below the surface. In this lecture, we will also discuss the principles of stress in the subsurface, characterization of fractures in boreholes, economic implications and its related

					geological disasters due to subsurface pressure
29	GL4115	7	2	Geothermal Hydrology	This course discusses geothermal and hydrothermal systems, hydrothermal fluids, surface geothermal manifestations, hydrothermal alteration, geothermal exploration and potential, geophysical geology and hydrothermal geochemical surveys, geothermal drilling and integrated or integrated geological surveys

SECOND YEAR SEMESTER (AUGUST-DECEMBER)

No	Code	Semester	Credits	Subject	Description
30	CH1202	2	3	Basic Chemistry II	This course learns about fundamental or basic concepts in chemistry that continual from basic I.
31	GL1201	2	3	Physical Geology	This course introduces the basics of geology to understand the processes that occur on earth, introduction of objects and the morphology of the earth.
32	GL2202	4	2	Advanced stratigraphy	This course discusses mainly the sequence stratigraphy for sedimentary rocks correlation. It includes the relation between tectonic, sea-level, and sediment supply from surface and subsurface data (e.g. wireline log and seismic). The main goal is using sequence stratigraphy for depositional environment prediction.
33	GL2203	4	3	Petrology	This course includes the basic principles of igneous-, sedimentary-, and metamorphic rocks classifications, including their genesis, mineral

					compositions, texture and primary structures. The rock cycles and its relations tectonics and depositional environments will also be discussed in this course.
34	GL2204	4	2	Geothermal Geology	This course discusses the geothermal systems in different tectonic and volcanic settings based on their manifestation in the surface. This course includes also different methodologies in geothermal analysis such as geochemical and remote sensing analysis for geothermal exploration.
35	GL2205	4	2	Marine Geology	This course explains shallow to deep marine deposits as the result of geological processes that related to the physical and chemical processes in marine. Different kind of deep-water deposits and its relation to the economic resources, paleoclimate and paleoceanography will be discussed too.
36	GL2206	4	2	Hydrogeology	Hydrogeology discusses the relationship between geology and water flow both on the surface and below the surface.
37	GL2208	4	2	Writing and Scientific Presentation Techniques	This course prepares students professional communication during their scientific report, proposals, paper publication, thesis and professional presentation. This course focusses on technical writing and communication during presentation.
38	GL2209	4	3	Structural Geology	This course introduces undergraduate students to the basic principles of structural geology. It links to industry applications which emphasize the importance of structural

					geology in exploration and exploitation of geological resources, such as petroleum, mineral and water resources.
39	GL2210	4	3	Micropaleontology and Biostratigraphy	This course explains different kinds of microfossils and their depositional environment. Students will learn how to collect and prepare the samples. This course includes microfossil determination and micropaleontological data analysis to determine the age, depositional environment, and biostratigraphic correlation.
40	GL3201	6	3	Geological Seismic Interpretation	This course discusses and examines the basic principles of seismic method and seismic interpretation. Seismic interpretation includes 2D and 3D structural and stratigraphic interpretation, horizon and formation attributes on work station
41	GL3202	6	2	Formation Evaluation	This course focusses on evaluation of wireline logging for exploration and production in the oil and gas industry. It includes basic principles and exercises of petrophysics and well logging analysis to evaluate drilling wells and estimate reserves.
42	GL3204	6	4	Field Geology	This field course implements the geological knowledge that students have gained by conducting direct observation of geological data in the field. Course will begin with field orientation, observation techniques, geological trajectory, data retrieval techniques, structural analysis, interpretation of the relationship of data in the field compiled in the field geological

					mapping including geological synthesis in the final report.
43	GL3205	6	2	Geology of Indonesia	This course examines the regional geology of Indonesia including its tectonic, structural geology and stratigraphic evolutions. Their association with geological hazard and resources will be discussed also in this course.
44	GL3206	6	2	Genesis of Economic Minerals	This course gives basic principles of genesis, model and exploration concepts for ore geology and industrial minerals. These economic minerals will be discussed from their formation within igneous, sedimentary, and metamorphic rocks to their distribution in regional tectonic context based on geochemical and geophysical analysis.
45	GL3207	6	3	Engineering geology	This course is an applied geology that focuses on the importance of geology for engineering study. It includes the collection, analysis and interpretation of geological data for the location, design, construction, operation and maintenance of engineering works.
46	GP3106	6	2	Geo-statistics	This course will learn about the introduction of basic principles of statistics and their application in geological analysis. This course introduces univariate data distribution theory, various regression methods, extrapolation, intrapolation methods, signal processing methods, spatial data analysis and image processing methods.
47	GL4201	8	5	Bachelor Thesis	Final project for the bachelor's degree.

48	GL4202	8	2	Internship	Internship will give opportunity on job training in industry and companies. Students must write a report which is then assessed by their supervisor.

ELECTIVE COURSE
SECOND YEAR SEMESTER

No	Code	Semester	Credits	Subject	Description
49	GL3101	4	2	Geological Hazard Mitigation	This course discusses and examines the processes of the earth that directly impact human society and provides information on natural hazards, disasters, and catastrophes it causes. The course integrates principles of geology, hydrology, meteorology, climatology, oceanography, soil science, ecology, as well as solar system astronomy and discusses ways to mitigate and reduce those hazards' risks.
50	Gl3209	6	2	Petroleum Geochemistry	This course discusses and examines the characteristics of oil and gas based on its source rocks. It includes the richness, organic material, depositional environment and information about oil and gas formation. Different types of geochemical analyses will be discussed in this course including the biological marker that s important for hydrocarbon exploration.
51	GL3210	6	2	Remote Sensing	This focusses on geological interpretation and analysis of remotely sensed images of the earth. Students will examine different types of remotely sensed images of the Earth and learn how to interpret them.

52	Gl4113	6	2	Advanced structural geology	This course is designed to develop advanced skills in structural and tectonic analysis. It includes interpretation and deformational processes of geological structures from a variety of different tectonic settings and fracture processes and analysis. The course covers extensional fault geometry and rift systems, thrust systems, strike slip systems and inversion.
53	Gl31076	6	2	Geothermal Geochemistry	This course discusses the chemical properties of geothermal fluids. Students will learn different geochemical methods to evaluate the geothermal prospectivity and monitoring of geothermal reservoir.

PETROLEUM ENGINEERING

Petroleum Engineering Course
First Year Semester
(August - December)

No	Code	Credits	Subject	Description
1	CE 2105	3	Thermodynamics	The Thermodynamics course discusses the relationship between heat and external effort in general and in particular discusses: Energy, Energy Transfer, Pure Substance, Energy Analysis from closed systems, mass and energy analysis of volume controls, Law II Thermodynamics, Entropy, and Transfer Mechanisms heat. In essence the course of Thermodynamics deepens the students' knowledge of heat given in the Introduction to Mechanics, Heat and Sound courses and deepens the concepts of integral and differential graphs in the Mathematics Physics course.
2	PE 2101	3	Petrophysics + Practices	Theoretical and laboratory study of basic reservoir rock physical properties; such as: porosity; absolute, effective and relative permeability; fluid saturation; rock compressibility; fluid-rock interaction; capillary pressure; resistivity; hydrocarbon trap and its components; porous rock characteristics; forces applied on rocks; cut-off; and pressure & temperature effects on the rock properties.
3	PE 2102	3	Reservoir Fluids + Practice	Theoretical and laboratory study of reservoir fluids behavior and properties from the reservoir until it was delivered to the surface (including: density; viscosity; and other corresponding properties).
4	PE 2103	2	Probability and Statistics	Statistic and probability role in engineering, starting from applied statistic; probability theories; probability distribution; continuous random variable; random sampling; data description until hypothesis testing on single sample.
5	PE2104	2	Introduction of Information Technology and Algorithms	Students have an overview of concept concepts and important topics in information technology studies and are able to develop these concepts through further lecture processes or the development of insights independently using existing information technology and algorithms

6	PE 2105	2	Petroleum Economy and Management	To comprehend and evaluate social-economic-environmental impact of a mineral resource extraction to build a basic concept of economy and analyze the its contribution (either be positive or negative) for sustainable development with the additional consideration of the potential risk during operation,
7	GL 2101	3	Sedimentology and Stratigraphy Principles	The course integrated between Sedimentology and Stratigraphy explained the genetic sedimentary rocks, and its relationship in space and time. Relationship of strata will be explained in the stratigraphic correlation framework
8	GL 2109	2	Introduction to Energy Exploration & Production	Introduction to energy industries on their exploration and production (extraction) aspects
9	PE 3101	3	Reservoir Engineering II	A further continuation of Reservoir Engineering I that will focusing on more advance reservoir performance analysis, such as well flowing equation; decline and type curve; reservoir performance forecast; water influx; water and gas coning; and gas reservoir engineering.
10	PE 3102	3	Drilling Engineering II + Practice	A further continuation of Drilling Engineering I, will be focusing more on formation pressure, drilling control, casing design, cement design, trajectory design, and the proper completion.
11	PE 3103	3	Production Engineering I	Petroleum production system design according to reservoir performance and using optimization for optimal flow rate capacity.
12	PE 3104	3	Well Test	Well test methods used to analyze well performance; including Drill Stem Test, Pressure Test, Flow Test, and other corresponding methods with the additional concept of naturally fractured well testing and current well testing innovation.
13	PE 3105	3	Numerical Method	Applying numerical method to petroleum aspect; differential and integral; solution; curve fitting; interpolation; numerical simulation methods and their computer application.
14	PE 3106	2	Well Completion & Work Over	Fundamental of well completion and workover job; including technical factors that affect well completion and workover design which are usually occur in such project.
15	PE 4101	3	Geothermal Engineering	Geothermal energy and its field development concept; exploration, drilling and production method; with study cases from several geothermal fields in the world.

16	PE 4102	3	Natural Gas Engineering	Natural gas main concept including its physical and chemical properties; gas flow in porous media; gas well deliverability test; gas well performance; gas flow in pipeline; gas production method design and its potential problems.
17	PE 4103	3	Reservoir Simulation	Reservoir performance analysis and forecast using state-of-the-art commercial reservoir simulation software.
18	PE 4104	3	Petroleum Field Development	Methods used to develop a petroleum field, including reservoir modelling, reservoir simulation and material balance with the final project of making a Plan of Development (POD) report.
19	PE 4105	3	Integrated Field Project	To discuss several management and economic cases of the petroleum project that include development planning, contract, price, non-economic field, portfolio, risk management and environmental.
20	CO 0011	2	Job Preparation & Professional Ethics	Introduction and preparation to the professional working environment and ethics that follow.

Petroleum Engineering Course
Second Year Semester (January -May)

No	Code	Credits	Subject	Description
21	GL 1201	3	Physical geology	Subjects Physical geology is the science of geology that studies the constituent materials of the earth and tries to give students an understanding of the processes that occur inside and on their surface.
22	PE 2201	3	Reservoir Engineering	Comprehensive study of reservoir according to its petrophysics and fluids properties, including its fluids flow in porous media; primary drive mechanism and reserve calculation.
23	PE 2202	3	Drilling Engineering I+ Practice	Theoretical and laboratory approach to design a proper comprehensive drilling program; from choosing rig, drill string, drilling bit, drilling mud and drilling hydraulic
24	PE 2203	3	Fluid Mechanic	This course considers Hydrostatics, the balance of floating objects, fluid kinematics, Bernoulli equations, momentum equations, overflowing flow, water flow through pipes and steady through a pipe system.

25	PE 2204	3	Well Logging	Evaluation of the drilled formation using logging tools and methods: coring and mud logging, spontaneous potential (SP) log, gamma ray log, porosity log and interpretation log.
26	PE 2205	3	Partial Differential Equation	Partial differential equations, solutions in series, systems of differential equations.
27	GL 3105	3	Petroleum Geology	This course learns that students understand the situation or the way oil and gas are present in the earth's crust
28	ME 2201	2	Mechanics and Material Strength	This course aims to enable students to be able to calculate stresses and strain due to axial forces and shear forces capable of calculating torque and bending
29	PE 3201	3	Production Engineering II	A further continuation of Production Engineering I, will be more focusing on artificial lift methods and their efficient design by considering the field operational constraints.
30	PE 3202	3	Enhanced Oil Recovery (EOR)	Definition and classification of Enhanced Oil Recovery (EOR); including water injection, gas injection, chemical injection, thermal injection and microbial injection.
31	PE 3203	3	Well Stimulation	Fundamental of petroleum well stimulation: acidizing and hydraulic fracturing; choosing well candidate; acidizing design; analysis of fracturing pressure to its geometrical fracture model and evaluations.
32	PE 3204	3	Surface Facilities	Process and design of the surface facilities in petroleum industry; including separator, gas and oil dehydrating system, gas sweetening, water injection, pipeline for petroleum fluid transportation, type of pumps and compressors.
33	PE 3001	2	Industrial Internship	Practical work courses carried out with apprenticeship activities at companies / agencies for 1-2 months. The purpose of this activity is that students are expected to be able to learn and adapt to the real world of work so that it can be used as a provision and experience after graduation.
34	EV 4063/PE 3002	2	Health Safety & Environment	Execute and evaluate a safe and environmentally friendly working habits with consideration of potential hazards that may occur.

35	PE 4001	5	Final Project (Thesis)	The Final Project course invites and guides students to understand and be able to apply the Basic Concepts of Research. The material presented includes: methods, scope and cycle of research, general stages of research, research variables, survey research methods, problem solving research, experimental research, development research, proposal making techniques and research reports. At the end of the lecture students are required to write a Final Project proposal to be done.

Suggested Optional Course

No	Code	Credit	Subject	Description
36	PE 3002/PE 3004	3	Non-Conventional Hydrocarbon	Current unconventional hydrocarbon source; especially shale gas, shale oil, heavy oil, coal bed methane, and hydrates
37	PE 3003	3	Law & Regulation in Petroleum	Discussion subject of petroleum law and regulation from upstream to downstream business; the history of petroleum industry; government policies of petroleum industry; ruling, trading and development of petroleum industries in Indonesia.
38	PE 4002	2	Capita and Selecta in Production	A discussion about development of petroleum engineering (field operational and methods) from papers, experimental results, and field case studies with new approach; giving priority to studies of new inflow operation methods, fluids flow in pipeline, artificial lift, fluids separation, etc.
39	PE 4003	2	Capita Selecta in Drilling	New and big problem in drilling operation will be discussed in class, and the students have many problems to solve as a team.
40	PE 4004	3	Reservoir Characterization & Description	Integrated reservoir depiction using geology, geophysics, petrophysics, and other fields data with the further discussion of geological modelling and geostatic methods in reservoir modelling.
41	PE 4005	3	Carbonate & Naturally Fracture Reservoir	Focusing on the complex and heterogenous carbonate and naturally fractured reservoir; will further discuss about chemical characteristics, formation, production, fluids flow equation, and enhanced oil recovery for carbonate and naturally fractured reservoir.

42	PE 4006	3	Production Problems	This course studies the problems faced during oil and gas production and the best methods for handling them. At the end of the semester there will be a field trip to the oil and gas field to see the production problems that occur (optional).
43	PE 4007	3	Production Optimization	This course discusses modeling using software about well design, analysis of IPR, Nodal analysis, and sensitivity testing of production parameters.
44	PE 4008	3	Modern Drilling Techniques	In this lecture students learn non-conventional drilling techniques such as Managed Pressure Drilling (MPD), Casing Drilling, Horizontal and Extended Reach Drilling (ERD), and deep sea Drilling Operations. This lecture will also discuss papers and the latest research related to drilling operations.
45	PE 4009	3	Well Control	This course provides knowledge to students about the basic principles well control, as well as developing the ability of students to do so calculations needed to control the kick.
46	PE 4010	3	Oil and Gas Offshore Operations	In this course students learn about the history of the development of an offshore installation, the structure design of an offshore platform, a riser system for drilling and production, mooring and anchoring, topside design, and geophysical and geotechnical design on offshore exploration.
47	PE 4011	3	Well Design	This course gives an overview of the well construction process and an introduction to subsea drilling operations. The goal of the course is to provide an insight into the planning and execution of a modern drilling operation. Emphasis will be on the conceptual design and detailed engineering design calculations involved in planning a well.

Suggested Optional Course (Non-Petroleum Engineering)

No	Code	Credit	Subject	Description
48	MN 3102	3	Logistics and Supply Chain Management	This subject study the concept and the fit between supply chain strategy and competitive strategy of the company and how to achieve it, basic terminology and supply chain operations in the context of the business environment, effective policies in inventory management, demand variability, forecasting and lead time on inventory levels and costs, and understanding the issues of

				national and international supply chain management
49	MN 3106	3	Entrepreneurship	After taking this course students are expected to have an understanding and inspiration about entrepreneurship so that their motivation is motivated for entrepreneurship. This course consists of theories about the basic concepts of entrepreneurship including: attitudes, personality and profile of an entrepreneur, self-awareness, managerial ability development, courage to take risks, introduction of entrepreneurial model functions, developing ideas and analysis of business opportunities, SWOT analysis, making business designs in the field of food and presenting them. Learning methods with lectures, answers, discussions, presentations, exercises and assignments, Assessment consists of participation / activity in lectures, independent assignments, group assignments, presentations, semester MID exams and final semester examinations.
50	MN 3211	3	Project Management	This course provides students with an understanding of the basic principles of managing a project. Students also understand how a project is said to be successful. Project experience will be provided in the form of introduction to project management practices based on software commonly used in project management
51	EV 4261	3	Intro to Environmental Impact Assessment (EIA)	The EIA course will discuss the process of preparing and evaluating EIA documents through appropriate training and practice. Broadly speaking, the lecture material consisted of the meaning and role of the AMDAL, types of AMDAL, AMDAL documents, understanding the stages of preparing documents, proponents, drafters and AMDAL commissions.
52	EV 4262	3	Climate Change & Env. Issues	A comprehensive discussion about current climate change and environment issues related to the energy industries

FACULTY OF SCIENCE AND COMPUTER

CHEMISTRY

FIRST YEAR SEMESTER (AUGUST-DECEMBER)

No	Code	Semester	Credits	Subject	Description
1	CH1101	1	3	Chemistry 1	This course will learn about the concepts that are fundamental or basic in chemistry like Introduction to Chemistry, the Nature of Materials (Atoms, Compounds and Molecules) and the Nature of Periodic Tables, Moles and Stoichiometry, Molecular Reactions in the Liquid Phase, Oxidation-Reduction (Redox), Energy and Chemical Changes , Atomic Quantum Mechanics, Basics of Chemical Bonds, Bonding Theory and Structure, Gas Properties, and Intermolecular Attractiveness and Properties of Liquids and Solids.
2	CH2101	3	4	Fundamental of Analytical Chemistry	This course will learn about the basic concepts of analytical chemistry in the methods selection and validation, analysis of experimental results and the basis of measurement using the method of determining mass and volume.
3	CH2102	3	3	Chemical Structure and Bonding	This course discusses the failure of classical mechanics which underlies the formation of quantum mechanics. The study of mechanics, learning about the schrodinger equation and its application in understanding electrons and the chemical bonds that make up molecules will be carried out. Molecular characteristics

					based on structure and symmetry, along with the basic concepts of vibrari, transition, rotation and NMR spectroscopy will also be the subject of discussions.
4	CH2103	3	4	Organic Chemistry 1	This course will learn about the basic concepts of organic chemistry which includes the structure, reactivity, properties, reactions and reaction mechanisms of organic compounds; and spectroscopic analysis. The topics are discussed in this course include the introduction of organic chemistry; molecular structure and stereochemistry; determination of the structure of organic compounds (MS, NMR, FTIR); equality and basicity; organic reactions: alkyl halides, alkenes and alkyols, alcohols and ethers, aldehydes and ketones, carboxylic acids and their derivatives, and amines.
5	CH2104	3	3	Inorganic Chemistry: Structure and Reactivity	This course will learn about the basic concepts of inorganic chemistry which consists of atomic structures, molecular structures, molecular symmetry, bonds in polyatomic molecules, structures & energetics, acids, bases, and ions in water solvents, reduction & oxidation, and non-water media.
6	CH3101	5	4	Instrumentation And Spectroscopy	This course learn about the basic principles and application of instrumentation and spectroscopy in chemical

					analysis, including its applications in the industrial world. Topics of discussion include electromagnetic waves and their use in spectroscopic analysis, introduction of basic components of spectroscopic instruments, absorption-based spectroscopic principles: UV-Vis & IR, and atomic absorption spectroscopy, emission-based spectroscopic principles: photoluminescence, and atomic emission spectroscopy, and principles scattering-based spectroscopy.
7	CH3102	5	3	Coordination Chemistry	This course will learn about the chemical properties of transition class elements which scope includes the electronic structure of transition group elements that influence the chemical and physical properties, organometallic compounds and their application in industries.
8	CH2103	5	4	Metabolism and Genetic Information	This course will learn about the basic knowledge about bioenergetics and metabolism, including: bioenergetics and types of biochemical reactions, metabolism (catabolism and anabolism) carbohydrates, fatty acids, amino acids and nucleic acids. This course also provides basic knowledge of genetic information, including: genes and chromosomes, DNA metabolism, RNA metabolism, protein

					metabolism and regulation of gene expression.
9	CH3104	5	4	Energetics and Kinetics	This course covers the introduction of thermodynamics along with its laws; phase and chemical equilibrium; thermodynamic solution; theory of gas kinetics; transport process; the rate of chemical reactions; and the mechanism of chemical reactions.
10	CH3105	5	3	Materials Chemistry	This course is dedicated to give a brief introduction on different materials (i.e metal, semiconductors, polymer and nanomaterials) and their applications in the development of current technologies. Solid characterization, especially XRD is given in beginning of class to give a basic knowledge in studying crystalline structure that will be frequenty used while studying different type of materials.
11	CH4101	7	2	Oil and Gas Chemistry	This course will learn about specific topics including the introduction of exploration, drilling, completion & recovery, chemical composition, petroleum processing, separation processes, environmental issues, and processes in petrochemicals.
12	CH4102	7	3	Research and Methodology in Chemistry	This course is designed as an introduction for students before conducting research. This course discusses the basic principles of research methodology in the field of chemistry, which includes the basic concepts of research;

					research classification; problems in research; the purpose and benefits of research in chemistry; research design which includes (problem formulation, theoretical framework and research design), literature review; research instrument; collection, processing, analysis and presentation of data; writing research report.
13	CH4103	7	3	Chemometrics	This course will learn about the basic understanding of planning and implementing measurement and analysis using multivariance statistics for problem solving. This course will provide knowledge on the basics of statistics, experimental design, sampling strategies, and data analysis using mutivarians. Students also learn about spectroscopic analysis data, factor analysis, response analysis, and least square. In addition to theoretical understanding, this course is also supported by using software.
14	EV4062	7	2	Introduction to Enviromental Science	This course will learn about the basic study of environmental science and environmental techniques which includes the introduction and explanation of the physical environment and life phenomena on earth; various aspects and factors that influence it; implications, relationships and consequences of human activities on the environment and how to prevent or

					overcome the effects of these various activities.
15	CH4104	7	3	Project Management	This course will learn about the basics of project management, so the students will gain the knwledge that can be to manage work projects. The topics discussed will be discussed, namely the scope of the project, building the structure of work details, making project plans, making project budgets, establishing and allocating resources, managing project development, identifying and managing risks, and understanding the project procurement process.
16	CH4105	7	3	Muldisciplinary Projects	This course contains knowledge collaboration from each expertise group in the Chemistry Study Program with conducting joint project. This course material begins with a discussion of the topic or theme that will be used as a reference in the work on joint projects, followed by literature studies, determining the timeline in working on joint projects, determining project models, project feasibility studies and implementing projects.

SECOND YEAR SEMESTER (JANUARY-MAY)

No	Code	Semester	Credits	Subject	Description
17	CH2101	2	3	Chemistry 2	This course will learn about the concepts that are fundamental or basic in chemistry. The topics

					discussed in this course include Thermodynamics: Terms of Contemplation of Reactions, Mixtures at Molecular Levels: Physical Properties of Solutions; Chemical equilibrium; Acid-base concept; Acid-base equilibrium in water; Chemical Kinetics; Solubility Equilibrium; Electrochemistry; Organic compounds.
18	CS0013	2	3	Introduction to Information Technology and Statistics	This course will learn about basic skills regarding the development of information technology, computational thinking skills as a problem solving technique, procedural programming techniques as their implementation and statistics to assist data processing and decision making.
19	CH2201	4	4	Separation, Purrification and Electrometry	This course is an advanced analytical chemistry course aimed at providing students with a deeper understanding of the theory and practice of classical as well as modern analytical techniques which are commonly used in quantification. The instrumental methods covered include separation, chromatographic methods and electroanalytical methods. Some specific methods are covered as examples of application of the classic tools and simple instruments. The laboratory section provides experience in some of these applications as well as instruction in the capabilities

					and operation of the instruments.
20	CH2202	4	3	Inorganic Chemistry:Main Groups	This course will learn about the elements in the main group consisting of a summary of the trends and patterns of elements in the periodic system, hydrogen gas and elements explanation of the main group (Groups 1, 2, 13, 14, 15, 16, 17, and 18).
21	CH2203	4	4	Organic Chemistry 2	This course will learn about organic reactions in aromatic compounds, alpha carbon, chemoselectivity, regioselectivity, pericyclic reactions and retrosynthesis.
22	CH2204	4	4	Structure and function of biomacromolecules	This course provides basic knowledge of the structure of biomacromolecules including proteins, nucleic acids, carbohydrates and fats in relation to the nature and function of these biomacromolecules in living things. The practice of this course provides knowledge and ability to isolate and characterize biomacromolecules.
23	CH2205	4	2	Laboratory Management	This course will learn about simple knowledge and practice for students about how to manage laboratories correctly according to the quality standards reference both in terms of management (QMS) and operations (ISO 17025 and GLP).
24	CH3201	6	3	Structure Elucidation	This course will learn about the concepts and interpretations of spectrum from XRD, IR, 1D and 2D NMR, and Mass Spectroscopy (MS) in determining the

					structure of organic compounds.
25	CH3202	6	3	Polymer Chemistry	This course will learn about the introduction of polymers including classification; synthesis; characterization; conformation; physical properties; mechanical properties; mechanism of degradation and availability in nature; addition of additives; biopolymers; and the application and development of polymers to material engineering technology.
26	CH3203	6	3	Chemical Modeling And Fund Analysis	This course will learn about the basics of R programming, chemical modeling and chemical data analysis. Chemical modeling discussed includes modeling the structure of organic, inorganic, supramolecular, and biomacromolecular compounds, modeling chemical kinetic systems using flux based analysis, and molecular dynamics simulation modeling using related software. As for chemical data analysis including linear and linear regression, and analysis, prediction and refinement of IR, NMR, XRD spectrum data using R programming and appropriate software.
27	CH3204	6	2	Chemical Literature	This course will learn about several topics such as introducing chemical literature, various chemical literature, indexing, libraries, maintaining current information, and methods for writing scientific articles and presentations.

28	CH3205	6	3	Surface Chemistry and Catalysis	This course will learn about the importance of surface concepts in heterogeneous reactions which are the foundations for studying aspects of catalysis and the design of catalyst materials.
29	CH3206	6	3	New and Renewable Energies	This course contains various types of New and Renewable Energy (EBT) technologies, the basic principles of technology untill the level of reaction, and contain issues related to the use of EBT. EBT technology that will be taught includes fossil fuels, fuel cells, geothermal, solar energy, biomass, and nuclear energy.
30	CH3207	6	2	Practical Work	In this course, students will go directly to an industry to feel the atmosphere and culture of work. Industries that are targeted in this Job Training must be related to chemistry.
31	CH4201	8	5	Final Project	The Final Project course is the graduation requirement for chemical students to graduate. This Final Project includes Seminars and Graduation court sessions.

ELECTIVE COURSES

No	Code	Credits	Subject	Description
32	CH3021	2	Health, Safety and Environment (K3L)	This course learns about the key issues related to health and safety aspects in the work environment both in terms of technical and human factors. Students will also learn about an approach that can be used to stop the work that not in accordance with work safety standards. In addition, students are also given an understanding of environmental aspects in managing management systems with the legal basis used.

33	CH3022	2	Stereochemistry	This course learns about the stereochemistry of organic compounds and their role in the fields of material, pharmaceutical and medical. The topics are discussed in this course cover the basic concepts of chirality and optical activity; molecular structure according to Fishcer, newman and Haworth; Configuration R, S, D, L, +, -; Molecular configuration without chiral atoms; Specific rotation, optical purity, and enantiomer excess (ee); Identification, calculation of composition and resolution of racemic mixtures; Stereochemical addition reaction; Stereochemical substitution reaction; Stereochemical elimination reaction; Stereochemical pericyclic reaction; Stereoisomer separation; and the role of stereochemistry in the fields of materials, pharmacy and medicine.
34	CH3023	2	Medicinal Chemistry	This course will learn about the physicochemical principles of drug work; effector-receptor theory; drug work goals along with pharmacology, pharmacokinetics and pharmacodynamics; strategies for drug discovery, design and development using docking and QSAR methods.
35	CH 3121	3	Technopreneurship	This course discusses the concepts of entrepreneurship and technopreneurship, Build a technopreneurship spirit including: creative thinking, risk management, leadership, seeking business ideas / ideas, business planning, business management in the form of products and services as well as marketing, and finance, legal aspects and business ethics; and business proposal presentations.
36	CH3221	2	Synthesis of Nanomaterials	This course will learn about nanomaterial synthesis using top-down and bottom-up methods. Topics that will be discussed include synthesis methods: hydrothermal / solvothermal,

				schlenk technique, sol-gel, solid state, Chemical Vapor Deposition (CVD), and Physical Vapor Deposition (PVD). In addition, students can apply the use of instruments such as XRD, UV-Vis, SEM, EDS / EDX, and photoluminescence. At the end of the course, students will be given a project for the synthesis and analysis of a nanomaterial based on a paper.
37	CH3222	3	Biomolecul Modelling and Simulations	This course will learn about the topics of visualization and analysis of biomolecular structures, predictions of biomolecular structures with homology modeling, molecular docking, basic principles of biomolecular simulation, and analysis of biomolecular simulation data. This course emphasizes practical ability to use software in modeling and simulating biomolecules.
38	CH3233	3	Industrial Biotechnology	This course provides basic knowledge about the application of biotechnology in the field of industry, the history of industrial biotechnology, the biology of system industry, fermentation technology, evolution in biocatalyst industry, enzyme production in industry, biocatalyst use, nanobiotechnology, upstream industrial biotechnology, biotechnology in chemical and pharmaceutical industries, biotechnology in food and feed industries, biofuels, economic aspects of industrial biotechnology, the social issues of biotechnology.
39	CH3224	2	Membran Technology	This course will learn about the basic knowledge of membrane classification; its synthesis technique; characterization; membrane modification; processes and transport that occur; the application; system design; and the process of polarization and blockage. In this course will learn about on gas separation, reverse

				osmosis, filtration, dialysis, and pervaporation also.
40	CH3225	2	Sampling Techniques	This course will introduce to students about sampling techniques including: sampling theory, classification of sampling techniques, estimation of sample size, determination of simple sample designs, sampling techniques, processing samples into data and data exposure.
41	CH3226	2	Applied Electrochemistry	This course will learn about the advanced electrochemical concepts and electrochemical-based methods that are useful in the fields of industry (metal processing and corrosion) and energy conversion and storage devices such as fuel cells, solar cells and Lithium ion batteries.
42	CH3227	3	Organometallics	This course will learn various organometallic compounds in the transition class and their application in organic synthesis, the introduction of transition group organometallic compounds in the form of structures, methods identification, basic concepts of catalysis reactions involving organometallics, and its application.
43	CH3228	2	Solid Characterization	This course will learn about varians tool to characterize solid materials. The topics are discussed in this course covers crystallography and diffraction techniques and techniques: microscopy, spectroscopy and thermal analysis.
44	CH4021	2	Computational Chemistry and its Applications	This course introduces fundamental theories and computational techniques in chemistry that can be used to study structures, bonds, chemical reactions and solving various chemical problems.
45	CH4022	2	Exploration Of Natural Products	This course will learn about the exploration of natural material compounds including: the understanding of natural compounds, classification, structure, properties, origins of biogenesis, biosynthesis,

				isolation, and identification which include groups of terpenoids, steroids, flavonoids, polyketides, polyphenols, alkaloids, and some examples of useful natural compounds, which are found in certain plant families.
46	CH4121	3	Organic Synthesis And Characterization	This course discusses concepts about: principles of discounting approaches; basic principles of synthesis of aromatic compounds; sequence of steps in the synthesis of organic compounds; disconnection of one C-X group: derivatives of carbonyl compounds, alcoholic compounds, esters, alkyl halides and sulfides, ethers; chemoselectivity; disconnect two C-X groups: 1,1-dysfunctional compound, 1,2-difunctional compound, 1,3-difunctional functional compound; synthesis of amines, protective groups. And learning how to characterize organic compounds synthesized using IR, 1-D and 2-D NMR, and mass spectroscopy (MS).
47	CH4122	2	Geochemistry	This course outlines the importance of chemical concepts and evolution by learning geochemistry theoretically by emphasizing chemical principles in learning earth science.

COMPUTER SCIENCE

FIRST YEAR SEMESTER (AUGUST-DECEMBER)

No	Code	Semester	Credits	Subject	Description
1	CS0012	1	2	Introduction to Information Technology and Algorithm	Basic Programming with C++
2	CS2111	3	3	Algorithm and Data Structures	Data Structure programming with C++
3	CS2112	3	4	Discrete Mathematics	Mathematical Logic, set, function, number theory.
4	CS2113	3	3	Computer Organization and Architecture	Boolean function of digital system. Explain the processor, memory, etc.
5	CS2114	3	3	Database	Basic database
6	CS2115	3	3	Graph Theory	Graph theory related to optimization.
7	CS3111	5	3	Web Programming	Develop a website using HTML, CSS, JavaScript, and PHP.
8	CS3112	5	3	Human Computer Interaction	Design and implement good interface of a software
9	CS3116	5	3	Artificial Intelligence	Search, knowledge-based, and learning-based algorithm. genetic algorithm, neural network, fuzzy logic.
10	CS3113	5	3	System Analysis and Design	Create software requirements specifications and description of software design
11	CS3114	5	4	Algorithm Design and Analysis	Algorithm complexity, Greedy Algorithm, Binary search
12	CS3115	5	3	Computer Networks	Networking LAN, WAN, MAN. OSI layers, TCP/IP.
13	CS4111	7	2	*Internship*	Field study in the world work
14	CS4112	7	2	*Green Computing*	environmental issue, energy efficiency, and regulation.
15	CS4115	7	3	*Interdiciplinary Project*	Conduct a project related to other discipline.
16	CS4114	7	2	Research Method	Writing research proposal
17	CS4113	7	3	*Technopreneurship*	Entrepreneurship for Computer Science (CS) students.

SECOND YEAR SEMESTER (AUGUST-DECEMBER)

No	Code	Semester	Credits	Subject	Description
18	CS1215	2	1	Basic Programming	Basic Programming with C++
19	CS2211	4	4	Object Oriented Programming	Create a program with OOP
20	CS2212	4	3	Automata	Theory of Computation, Finite Automata, Regular Expression.
21	CS2213	4	2	Management Information System	Basic information system and application to industry.
22	CS2214	4	3	Probability and Statistics	Calculate probability, Bayes Theorem, Distributed sampling.
23	CS2215	4	2	Software Engineering	Software development, design & implementation, software QA & testing.
24	CS2216	4	3	Operating System	Operating system's role in resources management. Especially Unix system .
25	CS3211	6	3	Software Quality Assurance	Verification, validation, and evolution of software.
26	CS3212	6	3	Software Management	Project and Resource planning. Project investment, uncertainty in decisions handling.
27	CS3213	6	4	Distributed System and Parallel Computing	Basic parallel computing with MPI
28	CS3215	6	3	Numerical and Computational Method	Linear & non-linear solution, polinomial, curve fitting, approximation and error.
29	CS3214	6	3	Cryptography and Information Security	Defensive programming, threat and attack, Network security.
30	CS3216	6	2	Computer and Society	Norm and ethic, intellectual property.
31	CO0011	8	2	Professional Ethics	Preparation for Entering the World of Work and Professional Ethics
32	CS4212	8	5	Bachelor Thesis	As Bachelor final project

FACULTY OF ECONOMICS & BUSINESSES

MANAGEMENT

MANAGEMENT COURSES
FIRST YEAR SEMESTER (AUGUST – DECEMBER)

No	Code	Credits	Subject	Description
1	EC1101	3	Introduction to Microeconomics	This course will analyze the behavior of consumers, producers and markets. This course encourages students to understand the main problems that occur in economic actor in achieving maximum satisfaction with a certain budget, understand the efficiency of the production process of the company's household in the use of production factors so that it can get maximum profit. Lecture material starts from the basic concepts of economic theory, the concept of demand and supply as well as the prices of balance, elasticity, theories of consumer behavior, production theory, cost theory and corporate balance in both perfect competition and imperfect competition markets.
2	CS1101	2	Introduction to Information Technology	This course provides basic knowledge of the basic concepts and utilization of computer systems (hardware and software) and networks ethically, safely, and legally.
3	MN1101	3	Introduction to Business	This course provides students with the knowledge, understanding and understanding to master their insights, the scope of various business concepts, both in the energy business and other fields.
4	MN1102	3	Business Mathematics	The course discusses about business phenomena that occur with a mathematical approach, a business phenomenon can be analyzed more easily and simply because variables that are often complicated can be expressed in the form of symbols and verbal sentences at length can be expressed in the form of mathematical relationships.

5	MN2101	3	Organizational Behavior	This course studies theories and concepts about behavior in organizations. These behaviors consist of individual behavior, group behavior, design and organizational structure, organizational processes, and organizational dynamics and changes. This course uses a theoretical approach and analyzes of cases considered relevant to organizational behavior material.
6	EC1102	3	Economics and Business Statistics 1	This course learns about the concepts of probability and statistics and their application in economics and business to make decisions.
7	MN2103	3	Financial Management 1	This course explains the theory of financial theory and its implementation in the company.
8	MN2104	2	Management of Natural Resources and Environment	This course discusses aspects of environmental management and all efforts that can be made to ensure the harmony between business and the environment and the application of sustainable natural resource management.
9	MN2105	3	Cost Accounting	Courses that provide basic knowledge of the cost accounting function to assist management in planning and controlling company activities
10	MN2106	3	Operation Research	This course provides an understanding of operations research, makes an operating research model with various devices such as linear programming, simplex models, sensitivity analysis. Apart from that, this course also teaches students to define problems in the real world in the form of quantitative modeling.
11	MN3101	3	Strategic Management	This course describes the pattern of strategic thinking in functions management includes: planning, implementation and supervision produce the right strategy in achieving their goals.
12	MN3102	3	Brand Management	This course provides understanding and knowledge about brand recognition, brand roles, brand objectives and brand management.
13	MN3103	3	Business Feasibility Study	This course provides knowledge and concepts about techniques and the factors that need to be considered and mastered in

				assess the feasibility of a project or business.
14	MN3104	3	Management Information System	The Management Information Systems course provides an understanding of how management information systems in an organization are used in making business decisions.
15	MN3105	3	Financial Institution and Markets	This course is designed to provide a unified framework for understanding financial markets, institutions and instruments. It focuses on several topics, including the structure and regulation of various markets in financial instruments, operation of banks and non-bank financial institutions, central bank operations and their effect on financial institutions, risks faced by the managers of financial institutions and the methods, markets and instruments for managing these risks.
16	MN3106	3	Project Management	This course guides students through fundamental project management concepts and behavioral skills needed to successfully launch, lead, and realize the benefits of projects in profit and non-profit organizations. Project management theory, terms and concepts are introduced in this course. This course will introduce project management topics such as resources, costs, time limits and project scope.
17	MN4111	5	Final Project	Final Project (TA) is a scientific work arranged according to scientific rules and written based on the rules of Indonesian Language, under the supervision or direction of the supervisor, to meet the quality criteria that have been determined according to their respective knowledge.
18	CO0011	2	Preparation to Enter Work and Professional Ethics	This course focuses on preparing students to face the world of work by providing provision for effective aspects of communication in the context of social interactions including organizational communication, interpersonal communication, group communication, and cross-cultural communication.

SECOND YEAR SEMESTER (JANUARY – MAY)

No	Code	Credits	Subject	Description
19	MN1201	3	Introduction to Management	This course studies management in terms of theory, concepts and processes as a fundamental part of management studies. This course also develops students' skills in applying management concepts. This course discusses how to achieve organizational goals with management function approach that consists of planning (planning), organizing (organizing), direction and implementation (leading), and supervision (controlling).
20	EC1201	3	Macroeconomics	This course is designed to provide general knowledge and understanding of macroeconomic concepts and theories especially related to the basic concepts of macroeconomic data related to output (GDP), prices and inflation, and employment and unemployment; fiscal and monetary policies; and economic problems from the standpoint of economics as a social science
21	MN1202	2	Accounting	This course provides knowledge about the basis of accounting finance, accounting equation, the technique of recording business transactions to become financial statements for service companies, trade and manufacturing in the form of individual companies and limited liability companies.
22	MN2201	3	Consumer Behavior	This course will provide an understanding in factors that affect and cognition, behavior factors, and environmental factors and the relationship of each factor with the marketing mix strategy (product, price, placement and promotion, people, physical evidence and process) of a product and or service.

23	MN220	3	Financial Management 2	This course is a follow-up course from Financial Management 1, in this course discusses the notions and theories of capital structure, and calculation of component costs: loans, preferred shares, shares and retained income, the effect of the loan structure on the overall capital cost (MM model), the effect of loan capital on borrowing costs and equity, and calculation of marginal capital costs. Such as: Modigliani Miller model (MM theory), balancing theory and pecking order theory.
24	MN2203	2	International Business	This course will discuss various factors that influence international business and international business strategies
25	MN2204	3	Managerial Accounting	This course explains the understanding of the role of accounting in planning and controlling costs. In addition, management accounting also provides information relating to costs to management that allows them to make decisions.
26	MN2205	3	Human Resource Management	This course examines human resource management theories, relevant applications and cases, it focuses on HR issues. This course provides students with contemporary theories of personnel management, to facilitate comprehension of the main functions and responsibilities of HR managers.
27	MN2206	3	Operation Management	This course discusses about related aspects of a business operating system including the design of operations and management of the company's operations.
28	EC1203	3	Economics and Business Statistics 2	This course learns about the basic concepts of advanced statistics and their application in economics and business to make a decision.
29	MN3201	3	Entrepreneurship	Entrepreneurship courses contain teaching on basic concepts of entrepreneurship, analyzing strategic issues in the field of entrepreneurship and basic entrepreneurial skills.

30	MN3202	3	Writing Technique and Research Proposal	This course studies the basic concepts and techniques for preparing research proposals. Some of the materials studied were: the principles of research proposal preparation, research principles, processes and ethics in research, techniques for preparing research proposals and developing proposal writing, as well as report writing and research results.
31	MN3203	3	Managerial Decision Making	This course studies theories related to taking decisions cover topics the basics of probability theory, cycles decision, decision structure, determination of choice, model and value possibilities, preferences and case studies.
32	MN3204	2	Internship	The Practical Work Program has three core objectives: the application of mastery of knowledge, improvement of problem-solving skills, and the development of soft-skills.

SHORT SEMESTER (JUNE – MID AUGUST)

No	Code	Credits	Subject	Description
33	EC2104	3	The Economic of Indonesia	This course is a selective capacity of the Indonesian Economy which will discuss number of relevant topics to be studied and understood by students about problems in economic development in Indonesia
34	MN0001	3	Law and Business Ethics	This course provides basic knowledge of ethics and legal provisions in every transaction in Indonesia. The emphasis of this course is given to business decision making based on ethics and introduction to civil law & commercial law relating to economic transactions.
35	MN0002	3	Business Communication	This course aims to improve students' ability to communicate, both written and oral. In work related to managerial, good communication skills are very mandatory for every

				manager / leader. This capability is expected to be useful in the work environment of other companies or organizations.
36	MN0011	3	Research Methods for Business	This course studies the techniques and methods used in research for business in both quantitative and qualitative. This course teaches the students about software or things needed in conducting research.
37	MN0003	3	Sales Management	This course studies the elements of effective sales force are key components of all marketing activities. This course will broaden students' understanding of marketing reach and potential impacts in order to achieve organizational goals.
38	MN0004	3	Industrial Relations	This course explains various issues and policies on the relationship between management and workers in Indonesia and introduces students to the terminology, history, and models of industrial relations systems in Indonesia. Students will find out how the industrial relations system in Indonesia works in general, as well as specific issues such as the role of trade unions, remuneration processes, industrial relations development in Indonesia, relations with employment, dispute resolution, and International and Occupational Health and Safety labor organizations.

ELECTIVE COURSE (FINANCIAL MANAGEMENT)

No	Code	Credits	Subject	Description
39	MN3215	3	Investment and Portfolio Management	This course focuses on the basic concepts in investment management and portfolio: trade off risk-return, portfolio optimization, diversification and arbitration.
40	MN3216	3	Risk Management	This course discusses systematic risk management in conditions of uncertainty that have the potential to

				provide loss or damage to the assets and revenues of the company so that management is needed right.

ELECTIVE COURSE (HUMAN RESOURCE MANAGEMENT)

41	MN3213	3	Change Management and Organizational Development	This subject focuses on several topics: foundations organizational change and development, level and type of organizational change, organizational development processes and interventions.
42	MN3214	3	Training and Development Management	This course discusses the management of training as a process where HR is directed to have certain specific abilities to achieve organizational goals and development as a systematic process for improve conceptual abilities, decision making and work behavior.

ELECTIVE COURSE (MARKETING MANAGEMENT)

43	MN3217	3	Digital Marketing Strategy	This course studies marketing strategies carried out in digital media. The implementation and implementation are adjusted to the business model, be it B2B (Business to Business) or C2C (Customer to Customer). In addition, this course presents a detailed understanding of all digital channels and channels.
44	MN3218	3	Service Marketing	Student will learn the concept of marketing in businesses that are specifically engaged in service businesses. Topics discussed are concepts and systems of service marketing, consumer behavior services, products services, service delivery systems, pricing of services, integrated service marketing communications, service quality and customer value, service customer satisfaction, service recovery, international

				service marketing, service marketing strategies and service operations and its implementation through case studies, analytical skills about excellence, weaknesses, opportunities and threats of service businesses.

ELECTIVE COURSE (OPERATIONAL MANAGEMENT)

45	MN3211	3	Supply Chain Management	This course aims to provide theoretical and practical knowledge to students about supply chain management so that they have the ability and competence to analyze and develop a system of supply chains from the beginning of procurement to reaching the user. Especially about principles basic and supply chain standards and the process
46	MN3212	3	Operational Outsourcing Management	This course aims to provide knowledge of theory and practice to students about operational outsourcing management so that they have the ability and competence to analyze and develop systems regarding outsourcing start from the beginning of outsourcing decisions and can calculate risks that arises and can mitigate it.

ELECTIVE COURSE (ENTREPRENEURSHIP)

47	MN3219	3	Creativity and Innovation	This course teaches students to understand the theory and concepts of creativity and innovation and their application both in professional life and in their own business.
48	MN3220	3	Product Development	This course teaches you to understand theories and concepts in product development. This is useful for creating and develop comprehensively the stages of product design and be able to apply it in the product design process

ELECTIVE COURSE

49	MN3221	3	Total Quality Management	This course discusses concepts, problems, and quality management applications to improve work productivity. Topic discussion in this course will be: philosophical foundation, criteria and measuring instruments, models and quality management approaches, and discuss implementation and its application in developing organizations, empowering individuals in organizations, so that they have the mind, motivation and work to show productive performance
50	MN3222	3	Procurement and Inventory Management	This course will provide provisions for students to have the competence to manage logistics to support the smooth running of office management activities.
51	MN3224	3	Management of Contract Labor and Outsourcing of Human Resources	The Contract Power and HR Transfer Management courses discuss Human Resource management through outsourcing and contract labor.
52	MN3225	3	Work Management	This course discusses the importance of an effective performance management system in helping organizations determine and achieve the short and long-term goals and emphasizes the importance of measuring the effectiveness of human resource activities designed to improve the performance of individuals and organizations.
53	MN3227	3	International Financial Management	This course discusses the role of international finance management, theories and various methods that are effective in helping organizations manage the influence of the dynamics of economic change and international business. This course also discusses cases and practices of contemporary international financial management, so that students can keep up with the latest international financial developments.
54	MN3228	3	Islamic Financial and Banking Management	This course discusses the role of sharia financial and banking management, theories and various methods in Sharia-based financial and banking practices

55	MN3230	3	Marketing Research	This course provides an understanding of research in the field of marketing, starting from finding problems, arranging proposals, compiling instruments, analyzing data, interpreting data, and making research reports.
56	MN3231	3	Customer Relationship Management	This course studies various management strategy approaches to create, develop and realize mutually beneficial relationships with customers in the long term, especially for potential customers, to maximize customer value and corporate profitability, by emphasizing the use of information technology as a basis for relationship strategies.
57	MN3233	3	Management of Cooperatives and Small Medium Enterprises	This course discusses cooperative practices, Small and Medium Enterprises (SMEs). This course discusses cooperative practices, Small and Medium Enterprises (SMEs). Students can understand how to build and manage cooperatives and small and medium enterprises
58	MN3234	3	Online Business	The course discusses procedures and things that must be known by an entrepreneur in running a business model online.
59	MN3141	2	Taxation	This course will discuss the Theory and Case of Taxation.
60	MN3142	2	Islamic Business	This course discusses the role of sharia business studies, theories and various methods in sharia-based business practices.
61	MN3143	2	Safety and Security Management	This course studies health and safety management according to government policies regarding protection of work safety, occupational health and safety standards, prevention of workplace accidents, risk of workplace accidents, management of occupational safety, safety devices, labor regulations, workers' rights and obligations and social security for workers.
62	MN3144	2	Mandarin Language	This course learns four language competencies (listening, reading, speaking and writing) basic Mandarin that can be used in business communication

63	MN3145	2	French Language	This course learns four language competencies (listening, reading, speaking and writing) basic French that can be used in business communication
64	MN3146	2	Arabic Language	This course studies four language competencies (listening, reading, speaking and writing) basic Arabic that can be used in business communication

***PS : Terms and condition applied for elective courses**

ECONOMICS

FIRST YEAR SEMESTER (AUGUST-DECEMBER)

No	Code	Semester	Credits	Subject	Description
1	EC 1101	1	3	Introduction to Microeconomics	This course analyzes consumer behavior, producers and markets and encourages students to understand the main problems that occur in each individual (economic actors) in achieving maximum satisfaction with a certain budget. Then understand the efficiency of the production process of the company's household in the use of production factors so that the maximum profit can be obtained. Lecture material starts from the basic concepts of economic theory, the concept of demand and supply as well as the prices of balance, elasticity, theories of consumer behavior, production theory, cost theory and corporate balance in both perfect competition and imperfect competition markets.
2	EC 1102	1	3	Statistics for Economics and Business	This course studies the concepts of probability and statistics and their application in economics and business to make a decision.
3	EC 1103	1	3	Basic Mathematics	This course provides a basic understanding of mathematics and calculus where the topics to be discussed in this course include: (1) functions and graphs, (2) basic concepts and matrix operations, (3) linear equation systems, (4) linear functions and non-linear, (5)

					basic concepts of limits, (6) basic concepts of derivatives and their applications, (7) transcendent functions, (8) basic concepts of integrals and their applications.
4	EC 1301	3	3	Microeconomics I	This course is designed to provide students with basics topics of microeconomics. The basic topics covered in this course are preferences and utility, utility maximization and choice, income and substitution effects, demand relationships among goods, market demand and elasticity, production functions, costs, profit maximization and supply, the partial equilibrium competitive model, applied competitive analysis, models of monopoly, traditional models of imperfect competition,
5	EC 2101	3	3	Macroeconomics 2	This course provide basic understanding to explain and analyze various substances that relevant to openness macroeconomic issues particularly balance of payment, exchange rates, purchasing power parity, terms of trade, demand and supply shocks, inflation shocks, economic growth, foreign capital, monetary policy, government debt, budget deficit, and stabilization policy
6	EC 2105	3	3	Cooperative Economics and Small Medium Enterprise	This course provides knowledge about cooperative which are the pillars of the nation's economy that students must understand as the foundation of the economic system of democracy in Indonesia. Besides that, it will also explained that

					cooperatives were able to become the driving force of the people's economy, especially the lower class and Micro, Small and Medium Enterprises (MSMEs). Both Cooperatives and MSMEs are related to each other and the characteristic of Indonesian economy.
7	EC 2103	3	3	Econometrics I	This course provides knowledge of basic econometrics methods for model testing and economic analysis.
8	EC 3101	3	3	Regional Economics	This course studies: introduction and regional economics, location theories, regional economic growth models, national and regional growth, Shift-Share analysis, growth centers, basic economic models, Table Input-Output (IO) models, development inequality between region, and regional development policy.
9	MN 1101	3	3	Introduction to Business	This course provides knowledge and understanding to master their insights, the scope of various business concepts, both in the energy business and other fields.
10	EC 2206	5	3	Green Economics	The concept of green economy emphasizes holistic thinking in making economic decisions that will have an impact on the survival of all ecosystems on planet Earth. This course provides a basic introduction to concepts and ideas which are the main concerns of the pioneers and activists of the green economy. The topics that will be delivered in this course include: (1) basic concepts and theories of green economy, (2) economics and identity, (3)

					work and money in the economic perspective, (4) the concept of green business, and (5) green economy policy.
11	EC 3102	5	3	Energy Economics	Energy economics courses are microeconomic and macroeconomic applications in the Energy field. This course explores the topics of energy macroeconomics, energy demand elasticity, energy conversion, and analysis of market structure in the energy business oil and gas and renewable energy.
12	EC 3103	5	3	Industrial Organization	This course provides knowledge on the main topics that exist in Industrial Organizations and also becomes a basic subject in preparing students to learn more about Industrial Organizations. The main focus of this course is about corporate behavior and the consequences of removing the assumption of a perfect competition market which can no longer use simple demand and supply curves. This course uses consumer and producer theory, optimization (calculus) and game theory.
13	EC 3104	5	3	Natural and Resources Environmental Economic	This course will discuss the basic principles, theories, and economic analysis of SDA & amp; environment, starting from understanding the basic concepts of the economy of natural resources & amp; environment, management SDA & amp; environment, the issue of natural resources & amp; current global environment, SDA & amp; environment and methods for

					assessing SDA & amp; environment. This course will lead students to be easier to study SDA & amp; advanced environment in the following semester. The topics presented in this course include: (1) basic concepts and theories of the economy of natural resources & amp; environment, (2) market failure and the role of government, (3) quality of the environment, (4) management of natural resources both renewable and non-renewable, (5) biodiversity, (6) introduction to valuation of natural resources & amp; environment, (7) SDA & amp; environment, and (8) SDA & amp; environment on a national and global scale.
14	EC 3105	5	3	Monetary Economics	The topics includes: role of central bank, Multiple Deposit Creation, determinants of money supply, instrument of monetary policy in Indonesia, correlation of the target and the objective of monetary policy, international financial system, strategy of monetary policy, determinants of money demand, the IS-LM model and its impacts, new theory of IS-LM and Monetary New Keynesian Phillips Curve, Transmission Mechanism of Monetary Policy, relationship between money and inflation, rationale expectation theory and capital market, monetary policy in Indonesia, balance of payment and economic equilibrium, bank system and policy, stability of bank system

					and macroprudential policy in Indonesia.
15	EC 3106	5	3	Qualitative Economic Model	This course provides knowledge about primary data collection using questionnaires. Students are expected to conduct research not only in quantitative analysis but also by using qualitative analysis
16	CO 0011	7	2	Preparation for Entering Work and Professional Ethics	

SECOND YEAR SEMESTER (AUGUST-DECEMBER)

No	Code	Semester	Credits	Subject	Description
17	EC 1201	2	3	History of Economic Theory	This course is the basis of the development of economics up until now and also develops the student mindset and concepts in solving economic issues based on the economic schools.
18	EC 1202	2	3	Introduction to Macroeconomics	This course is designed to provide general knowledge and understanding of macroeconomic concepts and theories related to the basic concepts of macroeconomic data related to output (GDP), prices and inflation, and employment and unemployment; fiscal and monetary policies; and economic problems from the standpoint of economics as a social science.
19	EC 1203	2	3	Advanced Statistics for Economics and Business	This course learns about the basic concepts of advanced statistics and their application in economics and business to make decisions. This course will the basis for the Econometrics course.

20	EC 2102	4	3	Microeconomics 2	The topics of this course includes choice under uncertain situations, the economics of information, game theory and strategic equilibrium, traditional models of imperfect competition.
21	EC 2201	4	3	Macroeconomics 2	This course provide basic understanding to explain and analyze various substances that relevant to openness macroeconomic issues particularly balance of payment, exchange rates, purchasing power parity, terms of trade, demand and supply shocks, inflation shocks, economic growth, foreign capital, monetary policy, government debt, budget deficit, and stabilization policy
22	EC 2202	4	3	Econometrics 2	This course provides knowledge of advanced econometric methods for economic analysis of time series data and panel data. The course encourages understanding regarding the development and formulation of ec+F33onometric models in time series and panel data
23	EC 2203	4	3	Economics for Public Sector	This course studies concepts and theories regarding: (1) economics and public finance; (2) government roles and functions; (3) market failure; (4) theory of public goods; (5) externalities; (6) analysis of benefits and costs; (7) analysis of government expenditure; (8) tax theory and its application and regional autonomy in Indonesia
24	EC 2204	4	3	Human Resource and Labor Economic	Human Resource Economics and Labor Economics is concerned with the determination of wages and hours of work in labor markets, studies individual, family, and market investments

					in various forms of human capital such as education, on-the-job training, and health. The field uses the tools of microeconomics and econometrics to examine empirical issues
25	EC 2205	4	3	International Trade	The topics includes introduction and international trade theory, gains from trade, demand and supply, offer curves, and the terms of trade, factor endowments and the heckscher-ohlin theory, economies of scale, imperfect competition, and international trade, economic growth and international trade, tariff, non tariff trade barriers and the new protectionism, economic integration, international resource movements and multinational corporations. The course also is fulfilled by knowledge, practices, and analysis on data of trade, Indicators of Trade Structure and some models of trade such as gravity model and introduction of GTAP model .
26	MN 1201	4	3	Introduction to Management	Introduction to Lecture Management studies management in terms of theory, concepts and processes as a fundamental part of management studies. This course also develops students' skills in applying management concepts. This course discusses how to achieve organizational goals with a management function approach consisting of planning, organizing, directing and implementing, and controlling.
27	EC 3201	6	3	Energy Market and Trading	Energy markets and trade contain quantitative material as the basis for forrward / future, options, clean / dark spread mathematical

					calculations and modeling, and resource optimization applied to the energy market. The material also includes predictions of the energy market using the right econometric method.
28	EC 3202	6	3	International Finance	The topics includes: the importance of international finance, foreign exchange (FX) market, balance of payment and effective exchange rates, exchange rate determination and related issues, the international monetary system and exchange rate arrangements, currency futures and swaps, currency options, purchasing power parity, covered interest parity, market efficiency, uncovered interest parity and real interest parity, exchange rate forecasting, foreign exchange risk and exposure, and foreign exchange risk management.
29	EC 3203	6	3	Central Bank and Financial Institution	This course introduce basic knowledge on banks and other financial institutions. It will discuss financial system, money, market, and financial institutions, foreign exchange market, banking industry, banking regulation, banking crisis, non-bank financial institutions, and financial derivatives
30	EC 4101	6	3	Integrated Project	This course is designed to develop the ability to manage projects or research students in groups by using their basic scientific abilities through specialization. With the help of lecturers, students plan, design, work on and report on a project or research.
31	EC 0001	6	2	Internship	The Practical Work Program has three core objectives: the

					application of mastery of knowledge, improvement of problem solving skills, and the development of soft-skills.
32	EC 0002	8	5	Thesis	Final Project (TA) is a scientific work arranged according to scientific rules and written based on the rules of Indonesian Language, under the supervision or direction of the supervisor, to meet the quality criteria that have been determined according to their respective knowledge.

SHORT SEMESTER (JUNE-MID AUGUST)

No	Code	Semester	Credits	Subject	Description
33	EC 1302	SP 1	3	Advanced Mathematical Economics	The course is a continuation of a Mathematics course which provides an understanding of concepts or techniques in mathematics to analyze economic, business and financial problems. The topics covered in this course are: (1) optimization with constraints of equations, (2) optimization with inequality constraints, (3) integral calculus, (4) linear differential equations, and (5) equations linear difference.
34	EC 1303	SP 1	3	Eonomic Development	The discussion covers the notion of economic development, development theories, as well as current issues of the development in developing countries, which will then be distinguished from a macroeconomic and microeconomic perspective.
35	EC 2104	SP 1	3	Indonesian Economy	This course is a selective aspect of the Indonesian economy which will discuss a number of relevant topics about the problems in economic development in Indonesia.

36	EC 2301	SP 2	2	Research Methodology	The topics given in this course include: lifelong learning, ethics and norms, scientific writing, scientific research and the mindset of scientific research, problem formulation, theory, frameworks and hypotheses, methodologies: research designs and data, writing introductions and methods of analysis, detecting plagiarism and integrity codes of ethics, undergraduate competencies, scientific writings and research proposals, and preparing scientific presentations.
37	EC 2302	SP 2	2	Project Management	Project management lectures are the basis of time management, human resources, costs, and quality throughout the project cycle and financial and economic calculations in the evaluation of a project. This course also develops insights in the development and evaluation of energy projects in Indonesia.
38	MN 1202	SP 2	2	Accounting Principles	This course provides knowledge about the basis of financial accounting, accounting equations, business transaction recording techniques so that it becomes a financial report for service companies, trade and manufacturing in the form of individual companies and limited liability company.

ELECTIVE COURSES

No	Code	Credits	Subject	Description
39	EC 3205	3	Economic Modelling	This elective course learns advanced theories in econometrics and computational solutions to advanced quantitative methods in economics. This course also teaches the basics of

				programming for solving economic models in Python or R.
40	EC 3206	3	Natural Resource and Environmental Evaluation	This course equips students in understanding the important role of natural resources and the environment that is often overlooked due to services provided by natural resources and non-marketed goods.This course studies what, how, and various analytical tools for calculating the economic valuation of natural and environmental resources. This course also discusses how to evaluate environmental quality as an impact on resource use, then study various approaches used for environmental economic valuation. Some of the valuation methods taught include contingent valuation method, conjoint analysis, choice experiment, hedonic
41	EC 3207	3	Analysis of Public Policy	Public policy analysis is a branch of science from economics that discusses various kinds of policies made by the government. This course discusses various types of case studies and analyzes on public policy.
42	EC 3208	3	Digital Economics	The Digital Economy studies energy economics from the aspects of financial technology (digital trading), blockchain for energy efficiency, and smart ecosystem energy mix, as a pilot for new information technology-based economic growth models.
43	EC 3209	3	Health Economics	Health Economics is a branch of science from economics that addresses services in the health sector. The demand for health services continues to increase as the population also increases. This course discusses effectiveness in the health sector with quantitative calculations.
44	EC 3210	3	Shari'ah Economics	This course provides a basic understanding of students so that they can be exposed further into the issues and problems of Islamic economics, business and finance that are currently developing both at national and international levels. This course discusses the concept of

				aqeedah, the history of Islamic economic thought, the concept of muamalah fiqh, usury and its types, sharia compliance principles (shari'a compliance), zakat, waqf, sharia financial institutions, Islamic banks, Islamic insurance, Islamic capital markets and sukuk, business ethics in Islam, introduction to Islamic accounting, entrepreneurship in Islam.
45	EC 3211	3	Political Economics	Political economics studies situations that arise when there is interaction between politics and economics. This course also regards income redistribution, taxation, the production of public goods, and other actions of the public sector as determined by a political process simultaneously with the economic process of exchange and production. The course introduces you to the most common ways to model politics formally and the application of these to the study of real world problems. The course also covers empirical testing of these models.

Note:

SP= Short Semester

FACULTY OF COMMUNICATION AND DIPLOMACY

INTERNATIONAL RELATION

University Mandatory Course
First Year Semester

No	Code	Credits	Subject	Description
1	UP1107	3	Introduction to Political Science	This subject will learn about politics as a science, system and process. Topic discussion will include the definition of politics, nation, power, legitimacy and authority.

University Mandatory Course
Second Year Semester

No	Code	Credits	Subject	Description
2	UP1108	3	Introduction to Law	This subject will learn the foundation of law, source of law, and the elements of law system.
3	UP1205	3	Philosophy of Science	This subject discusses about philosophy thought of social science in general. Topics to be discussed in this subject are demarcation of science and non-science, the aim of science, science methods, and various specific issues in social science.

International Relations Subject
First Year Semester

No	Code	Credits	Subject	Description
11	CO4001	2	Scientific Writing	This subject studies and honors writing and speaking skills with an emphasis on the scientific realm. These skills include the ability to compile scientific papers in form and content in accordance with applicable rules and abilities in expressing and communicating ideas / concepts of an Indonesian scientific work in accordance with the General Guidelines for Indonesian Spelling

12	IR1101	3	History of Modern World	This subject introduces student to important events during the 20th century that affects the international system
13	EC 1104	3	Introduction to Economics	This subject provide student with knowledge and general understanding about the concept and theory of economics (microeconomics and macroeconomics)
14	IR2101	2	International Relations theory 1	This subject will deepen the knowledge that related to theories in International Relations. Topics discussed in this subject include the birth and development of international relations theories, the Great Debate and the factors that affect the development of these theories.
15	IR2105	3	Globalization and Regionalism	This subject will discuss about the birth and impact of globalization towards politic, economy and social aspect in International relation realm. The topics will also include globalization impact in economic aspect that emerge economic integration globally and regionally.
16	IR2103	3	Foreign Policy (Indonesia)	This subject will introduce foreign policy concepts and theory, the analysis of foreign policy in international relations context and the evolution of Indonesian foreign policy.
17	IR2102	3	Diplomacy and Negotiation	This subject will discuss about the history, concept, goals, types, technique, instrument as well as theory and the practice of diplomacy and negotiation in international realm.
18	IR2106	3	Introduction to Security Studies	This subject examines two fundamental paradigms in security studies: the traditional paradigm and the non-traditional paradigm, as well as the basic concepts of security settings.

19	IR2107	3	Introduction to International Political Economy	This subject learns about the interaction between state and non-state actor in international economic and political context. Topics discussed include international relations perspective in IPE thoughts (liberalism, neoliberalism, structuralism. Keynesian, merchantilism, nationalism, etc.), the birth and development of Bretton Woods System, regime theory, international trade, international development, multi-national corporation and international monetary system.
20	IR3101	3	Global Governance	student will learn about interdependence and multilateralism as concepts in international actor interaction.
21	IR3102	3	Energy and Development	This subject looks at the relationship between global energy needs and human development. Topics discussed include the introduction to the concepts of development and poverty, poverty traps, global energy access, indicators of development, development and climate change, gender issues in development, the role of information and communication technology in development, and case studies.
22	IR3105	3	Non-conventional issues	This subject will discuss about non-traditional issues in international relations dynamics. Topic will be discussed include the development of social development issues, international contemporary system character, human rights and democracy, environment, information technology development, transnational crime, gender, ethnic identity, poverty, epidemic of a disease and development issues.

23	IR3111	3	Social Research Method	Student will understand how science built and developed through research activity. Topics will be discussed include scientific thinking, quantitative and qualitative approach, data collecting and analysis as well as social research method.
24	IR1303	3	The dynamic of South-American region	This subject explains the basic patterns and dynamics of relations between intra-South American countries, both in bilateral and multilateral contexts, as well as South American relations with other regions in the world. Topics discussed include (1) the background of the foreign policy of countries in the South American region; (2) transnational processes that include regional integration through MERCOSUR (Southern Common Market) and UNASUR (Union of South American Nations); (3) the dynamics of South America's external relations.
25	IR3224	2	Geopolitics of Energy	This subject designed to look at the interrelationship between geopolitics aspect with international security, international politics and energy issues.
26	IR3215	3	Energy Business and Conflict	This subject discusses the correlation of energy business in the world today with the potential for conflicts that occur due to the business process. In this subject, students will be provided with an understanding of the correlation between energy and conflict business and analytical skills related to conflict resolution that often occur, and how to manage the conflict.

27	IR1301	3	The dynamics of European Region	This subject teaches about the dynamics of the European region from a political, economic, socio-cultural and energy aspect using theories, concepts, or approaches to regionalism, geopolitics or other HI theories. In the subject of European Regional Dynamics, students will be taught about the economic integration of European countries, current issues, Russian foreign policy and the European Union region, energy issues and identity politics.
28	IR4102	3	Environmental Issues in International Relations	This subject will discuss about environmental issues. Student will learn how state-actor and non-state actor resolve the environmental issues such as deforestation, climate change and global warming. Moreover, student will be also taught about Kyoto Protocol, Copenhagen Convention and COP 21.
29	IR2207	3	US Global Policy	This subject studies US policy to achieve its interests in the global political arena as well as examples of US global forms of policy from time to time such as the Monroe Doctrine, the Truman Doctrine, the Marshall Plan, Containment Policy, Liberalization, Human Rights and War on Terror. Students will also be taught a general overview of foreign policy making in the US such as policy makers, external and internal factors that have an impact on their global policies.
30	IR4111	2	Practical Work	Practical Work is one of the subjects in the Pertamina University undergraduate curriculum where students practice working in the real world in their respective fields of science. KP has a weight of 2 credits and is a compulsory subject in 13 study

				programs and elective subjects in 2 study programs at Pertamina University.
31	IR4112	5	Thesis	Thesis is one of the compulsory subjects in the Pertamina University undergraduate curriculum. Thesis is a project carried out by students and consists of the design process or research and reporting. This project is carried out by scientific rules, reporting is written using Indonesian language rules, and is carried out under the guidance of at least one of Pertamina University lecturer.
32	IR2203	3	Energy Business and Conflict	This subject discusses the correlation of energy business in the world today with the potential for conflicts that occur due to the business process. In this subject, students will be provided with an understanding of the correlation between energy and conflict business and analytical skills related to conflict resolution that often occur, and how to manage the conflict.

International Relations Subject
Second Year Semester

No	**Code**	**Credits**	**Subject**	**Description**
33	IR1201	3	Introduction to International Relations	This subject learns the thought that underlies the emergence of main concepts in international relations since ancient Greece, Renaissance until the 20th century.
34	IR1202	3	International Law	This subject study the definition and limitations of international law, history of international law and its development, the essence and basis of international relations validity, and the subject of international law.

35	IR2201	2	International Relations Theory 2	This subject is a continuation of International Relation Theory 1. Topics discussed will include Feminism, Postcolonialism, Poststructuralism, Green Theory, The English School and Critical Theory
36	IR2206	3	Indonesia's defense diplomacy	This subject will discuss the using of diplomacy as a non-military instrument in achieving the national defense goals. student will study the context and policies surrounding the behavior of state diplomacy in maintaining and enhancing national defense, establishing cooperation mechanisms both at the bilateral-regional-international level to ensure security stability, as well as reviewing the development of the role and function of the armed forces in military operations other than war - OMSP / military operations other than war both in times of conflict and peacetime.
37	IR2205	3	Indonesia's Economic Diplomacy	This subject introduces the analytical framework of negotiation and decision making in Indonesia's economic diplomacy which focuses on trade, tourism, investation and development cooperation. Topics discussed include main actors, institutional-setting as well as domestic policy-making and international negotiation in economy sector.
38	IR2204	3	Contemporary World Order	This subject will discuss about international system and form of world order from time to time
39	IR2202	3	International Organization	This subject designed to introduce the history of International Organization, its concept and theory, as well as its role and function of International Organization in International Relations.

40	IR3103	3	China's Global Policy	This subject will discuss about china's foreign policy since Deng Xiaoping era period until current. Topics discussed include 1. China's foreign policy decision making factors, 2. China's foreign policy towards regional dynamics 3. specific issues about economic, energy and human rights in China's foreign policy.
41	IR3201	3	International Relations Research Method	This subject is a deepening of research methods especially used in the study of International Relations. Students will be introduced to the level of analysis approach, international scope and analytical techniques that are useful at the time of writing a proposed research seminar and thesis. In addition, students will be taught to use HI theories or concepts to answer research questions that are the focus of research.
42	IR3212	3	Indonesia's Energy Diplomacy	This subject provides an understanding of energy diplomacy concepts, the implementation of energy diplomacy by the world's largest energy exporting and importing countries, and the reflection of Indonesia's energy diplomacy
43	IR2203	3	Geo-economy and geostrategy	This subject studies concepts as part of the study of International Relations. Topics covered include an overview of the history of geopolitical developments, geo-economics, geo-strategy from time to time, theories and concepts used, geo-economic instruments and geographic implications on the interaction of policies among International relations actors

44	IR3213	3	State and Energy Security	Students will be able to analyze the interests of a country in the global arena with energy security in its international environment. Student will be taught to analyze case studies of Indonesia's national interests in achieving energy security. This subject correlates with other supporting subjects such as IR theory, geopolitics, security studies and the region.
45	IR2104	3	World Politics	This subject study international relation actors such as state and non-state along with the dynamics of global issues that surround them such as politics, economy, military, energy and environment. This subject also discusses changes in the axis of world power before and after the Cold War. Students will be taught about the concepts of unipolar, multipolar and bipolar in the world political constellation.
46	IR3104	3	The dynamics of Middle East and North Africa region	In this subject, students will be taught about the dynamics of the Middle East and North Africa from a political, economic, socio-cultural and energy aspects using theory, the concept of regionalism, geopolitics or other HI theories. Learning Dynamics subjects in the Africa and Middle East region not only teaches the interaction of state actors, but also transnational actors such as terrorism or the role of international organizations in the region.
47	CO4001	2	Preparation to Enter Work and Professional Ethics	This subject focuses on preparing students to face the world of work by providing provision for effective aspects of communication in the context of social interactions including organizational communication, interpersonal communication, group

				communication, and cross-cultural communication.
48	IR3222	2	Indonesia's defense strategy	This subject will learn about Indonesia's defense strategy from time to time.
49	IR3211	3	Multidisciplinary Project	This subject introduces students to work on a case study and search for creative problem solving and solutions in collaboration with other students across faculties and study programs.

International Relations Subject Short Semester

No	**Code**	**Credits**	**Subject**	**Description**
50	UP0012`	2	Pancasila and Citizenship	This subject focuses on knowledge development and understanding, and Indonesian nationality insight as the foundation of the student/professional development.
51	MN1201		Introduction to Management	This subject will teach about managerial tasks, which is done through reviewing the business environment, as well as planning (planning), organizing (organizing), direction and implementation / implementation (leading) and supervision / control (controlling). It also discusses various concepts, models and processes for managing the organization and the environment that influence it.
52	IR1300	3	Development of Information Technology	This subject introduces the development of information technology which includes the computer operations, hardware, software, networks, and the internet. In addition, this program also discusses the impact of the development of information technology on people's lives, using

			ICTs to improve the quality of work, information security, ethics and law in cyberspace.

International relations Subject Short Semester

No	Code	Credits	Subject	Description
53	IR1302	3	The dynamic of Asia-Pacific region	This subject aims to introduce regional perspectives on security and economic issues in Asia Pacific through conflicts and cooperation frameworks. This include the dynamics of interaction between countries, the presence of large powers in the Asia Pacific, the bargaining position of ASEAN and East Asian countries in the Asia-Pacific intraregional politics, as well as issues surrounding the Oceania and Pacific Islands countries.

Elective Course

No	Code	Credits	Subject	Description
54	IR3225	2	International Energy Actors	This subject particularly discussed about the international actors that affects energy sector.
55	IR3223	2	Political Economy of Energy	This subject provides an understanding of the interrelationship between the political economy conditions of a country and the extraction of natural resources (especially gas and oil), the relationship between states, extractive industries, interest groups, and the influence of a country's energy policy on the world energy market.

56	IR3221	2	Indonesia's Energy Policy	This subject provides an understanding of factors that influence the government in setting energy related policies, especially in the political context at the domestic and international level where these policies are designed and implemented.
57	IR4103	3	ASEAN Community	This subject provides students with an understanding of ASEAN; starting from the history of its founding, the principles and values agreed upon by the member countries, as well as the factors that drive the formation of the ASEAN Community along with its three pillars.

COMMUNICATION

FIRST YEAR SEMESTER (AUGUST-DECEMBER)

No	Code	Semester	Credits	Subject	Description
1	CO1101	1	2	Introduction to Anthropology	This course discusses various anthropological phenomena through various theoretical approaches especially the way of life through which society forms their social, cultural and historical relations. The discussion focuses on how anthropological concepts develop in the scientific history of anthropology. Discussions in this course are not limited to local phenomena in Indonesia but also to global phenomena.
2	CO1102	1	3	Introduction to Sociology	This course introduces the basic concepts of sociology as a tool of analysis to understand the various social phenomena that take place in everyday life. Introduction to basic sociological concepts will encourage students to use a sociological perspective to view and analyze the social phenomena that take place at the level of family, friendship, groups, communities, and even countries.
3	CO1103	1	3	Introduction to Communication	This course introduces communication as a comprehensive academic discipline by focusing on three aspects. First, the roots and history of its development. Second, conceptual and procedural understanding of all types of communication contexts. Third, the important role of communication in various aspects of human life.

4	C02102	3	3	Sociology of Communication	This course discusses various perspectives, theories, and sociological concepts as an analytical tool to understand communication as a fundamental social process that shape and in turn, is shaped by the dynamics of society at both the micro and macro levels.
5	C02103	3	3	Basic of Strategic Communication	This course will describe the strategic role of practical communication in an organization in the industry and introduce students to contemporary theories about corporate and organizational communication and give them a comprehensive understanding of the relationships and methods of communication between each stakeholder in the organization. In addition, this course offers instruments conceptual and practical for managing relationships with key stakeholders in the organization.
6	CO2104	3	3	Basic of Journalistic	This course introduces students to the history, basic philosophy, trends and practices of journalism. This course aims to offer an understanding of why journalists and journalistic practices are important in people's lives and how journalists function to meet their professional demands in the field of communication.
7	C02105	3	3	Media Literacy and Information	This course discusses media literacy, media consumption behavior, and the effects of media on its audience. This course explains that various media content can have different effects on the audience. In addition, this course trains students to analyze social

					problems related to media literacy and conduct activities that aim to cut the negative effects caused by not wisely consuming media
8	C02106	3	3	Organizational Communication	This course discusses the communication process in the setting of the interests of organizations such as business, social, or public organizations. This course explains that to meet organizational goals, organizational members need to build an organizational communication network system that includes formal, informal, internal and external communication networks so that by combining existing networks the organization can meet its goals effectively and efficiently.
9	CO3101	5	3	Multimedia Content Production	This course discusses the techniques of producing various media content, both journalistic and public relations, which will be disseminated through various media lines. In addition, this course describes the functions and characteristics of various types of media so that students understand what messages are suitable for a particular media.
10	CO3102	5	3	Quantitative Communication Research Methods	This course provides basic knowledge of how to plan, design, collect, process and conduct quantitative communication research. In addition, this course also provides knowledge on how to write quantitative communication research reports.
11	CO3103	5	3	Energy Communication	This course describes the positive and negative impacts of processing and using various

					kinds of energy, describes government and world policies related to energy use, and describes and explains communication interventions in the world of energy, especially in the fields of: information technology, health and safety, environment, communication internal and external, marketing communications, and government and world policies in overcoming the effects of energy processing and use.
12	CO3104	5	3	Social Marketing Management	This course discusses how to encourage people to adopt a number of solutions to various social problems by using appropriate marketing communication instruments. In addition, this course also explains the steps of idea searching, planning and implementation of social campaigns.
13	CO3105	5	3	Political Economy of Communication	This course discusses political economy as one of the main approaches in communication research. In more detail, this course will discuss the dialectic between social relations, especially power relations, with the production, distribution, and consumption of communication resources because this dialectic determine forms of social life and drive social change in society. This course will discuss the dialectic between social relations and communication resources using three main concepts, namely commodification, spatialization, and structuration.
14	CO3106	5	3	Communication Law and Ethics	This course discusses various legal in the field of

					communication dan explain the important role of ethics in the field of public relations, marketing communications, and journalism to guide and direct behavior.
15	CO3107	5		Career Development	This course aims to direct students to make career choices they want to pursue after completing their studies and discuss strategic steps to develop their career choices. In addition, this course discusses entrepreneurial knowledge to manage ideas, draw action plans, and more.
16	CO4102	7	3	Contemporary Communication Issues	This course directs students in an in-depth analysis of the latest communication issues in the fields of law, politics, economics, culture and energy. Students will gain a concrete understanding of the dynamic and contextual nature of the communication challenges in various fields.

SECOND YEAR SEMESTER (JANUARY-MAY)

No	Code	Semester	Credits	Subject	Description
17	CO1201	2	3	Communication Theories	This course introduces and discusses various theories in communication science as an analytical tool to understand, describe and explain various communication phenomena.

18	CO2201	4	3	Media Management	This course discusses history, trends, and problems related to media management. In more detail, this course offers knowledge related to the structure of media organizations, various problems and challenges in the media industry, media strategies and operational planning and trends in the growing media business.
19	CO 2202	4	3	Public Relations	This course discusses the basic concepts of public relations and public relations job descriptions. The discussion focuses on maintaining and managing communication relationships between stakeholders, both internally and externally.
20	CO2203	4	3	Visual Communication	This course discusses concepts and theories of visual communication, especially about human efforts to spread messages that focus on visual aspects to attract audiences. In addition, this course will discuss various topics on aesthetics, ethics, representation, cognition, and visual literacy that are important in the practice of visual communication from various forms of graphic design.
21	CO 2204	4	2	Public Speaking	This course discusses public communication strategies. This course will introduce students to the types of public speaking, speech preparation, audience analysis, building emotional connections, and building relationships with stakeholders.
22	CO 2205	4	3	Marketing Communication	This course examines various marketing mixes in communication, starting from products presentation to form awareness that certain communication products exist

					(brand awareness). In addition, introducing various promotional instruments that can support marketing communication activities.
23	CO 2206	4	3	Customer Behavior	This course discusses complex processes that occur when people or groups carry out the process of selecting, buying, using, or disposing of products, services, ideas, or experiences to satisfy various needs and desires. In addition, this course also discusses the concepts of communication, psychology, and marketing that can explain human relations and products, services, ideas, or experiences that shape human identity as consumers.
24	CO2207	4	3	Psychology of Communication	This course discusses communication as a psychological phenomenon. Communication is understood as behavior that expresses certain mental conditions. Mental conditions are themselves products of certain psychological processes. In more detail, this course discusses conceptual and historical issues in psychology (chips), various major branches in psychology, various concepts and theories in communication psychology, and media psychology as a special branch of communication psychology.
25	CO3201	6	3	Qualitative Communication Research Methods	This course provides basic knowledge of how to plan and carry out qualitative communication research. Topics covered include paradigms, research design, research strategies, informant selection methods, data collection

					methods, data analysis and interpretation methods, qualitative communication research ethics, and techniques for writing qualitative communication research reports.
26	CO3102	6	3	Crisis and Risk Communication	This course explains how communication experts can make and implement communication plans related to crisis management and risk. Because the concept of crisis and risk is intrinsically an interdisciplinary concept, this course will depend on literature from various disciplines and perspectives, not only from the aspect of communication, but from aspects of psychology, sociology, and formal risk analysis. This course will study cases from various issues and contexts including environment, technology or health risks, and natural disasters.
27	CO3203	6	2	Cinematography	Cinematography is a course that collaborates between the ability to tell stories and the ability to make visual narratives from the story. This course discusses how story ideas are then converted into audio-visual form by first processing them with the right lighting, image composition, and image movement. The course also emphasizes how to deliver good story ideas as effective messages.

ELECTIVE COURSES

No	Code	Credits	Subject	Description
28	CO3221	3	Writing Public Relations	This course discusses various types of public relations writing, aspects to consider when writing, basic writing techniques such as making press

				releases and drawing up good and interesting proposals.
29	CO3222	3	Advertisement Production	This course discusses the history of product promotion in the modern industrial world, changes in the functions of advertising agencies, and techniques for producing modern advertisements. This course also train student to produce advertisement for certain media.
30	CO3223	3	Activity Management	This course discusses how event organizers manage various things starting from planning to evaluating activities that refer to concepts previously designed with various theories and approaches.
31	CO3224	3	Journalistic writing and reporting	This course discusses writing techniques according to journalistic writing rules that are easy to apply and adapt to various forms of media. In addition, this course explains good and ethical reporting techniques in collecting journalistic data.
32	CO3225	3	Media Entrepreneurship	This course explains the business processes that occur in a media company. In addition, it describes the steps of organizational decision-making, market research as an effort to produce the desired amount of profit and explains how to formulate planning, models and business strategy designs.
33	CO3226	3	Digital Media and Society	This course examines how contemporary society apply digital media and its impact on various aspects of social life ranging from economics, politics, to culture.
34	CO3121	3	Digital Based Business	This course discusses aspects of trade transactions carried out through online media and their relationship to marketing communication practices and explains marketing communication concepts and trends that are generally carried out by multinational and startup companies both in Indonesia and in the world.

35	CO3122	3	Creative Writing	This course discusses various forms of creative writing methods, both fiction and nonfiction. This course also discuss message dissemination technique and career opportunities in the field of creative writing.
36	CO3103	3	Communication on Climate Change and the Environment	This course explains the barriers associated with public acceptance of climate change and involves them to make the changes needed to overcome these complex challenges. This course overlaps interdisciplinary with environmental communication.
37	CO3124	3	Sport Communication	This course discusses sports as a cultural product. This course will explain the history of media coverage of sports, the strategy of marketing sports media, and the power relations in the practice of media related to sporting events.
38	CO3125	3	Health Communication	This course teaches about social marketing communication strategies in the health sector and how communication functions in the field of health services.
39	CO3126	3	Financial Company Communication	This course discusses the communication processes, functions, and responsibilities of communication actors in the financial industry in Indonesia
40	CO3237	3	Gender Communication	This course explains how gender influence communication process in everyday lives and how communication about gender influence gender issues. This course aim to prevent student desensitization to gender issues because of imbalance and inaccurate media coverage of gender issues.
41	CO3128	3	Celebrity and Infotainment Studies	This course examines the basic concepts of celebrities, including charisma, narcissism, and commodification. Furthermore, this course discusses theoretical and methodological approaches in the field of celebrity studies, such as Marxism,

			structuralism, semiotics, and the culture of materialism. This course also reveals the role of the media in debates and controversies related to celebrities.

SHORT SEMESTER COURSES

No	Code	Credits	Subject	Description
41	C01301	3	Group Communication	This course discusses various aspects of group communication and group interaction in both face-to-face and online contexts. In addition, this course also addresses group cohesiveness and conflict management in groups.
42	C01302	3	Interpersonal Communication	This course will study interpersonal interactions both verbally and non-verbally, sharing information and feelings between people or in small groups, interpersonal relationships, and how to deal with conflicts in interpersonal relationships.
43	C01303	3	Development of Information and Communication Technology	This course discusses the history, development and characteristics of media technology, both conventional and digital. In addition, this course describes literacy and the use of computer media as a communication instrument.
44	CO2101	3	Mass Communication	This course discusses various topics and components of mass communication. This course also discusses media as economic, industrial and cultural institutions in terms of history, society, culture and politics. Furthermore, this course discusses the future of media institutions after new media appears.
45	CO2301	3	Intercultural Communication	This course discusses the process of communication that occurs in intercultural contexts. This course invites students to discuss verbal and non-verbal messages, power, conflict, adaptation, and competencies in intercultural communication both in the

				national (Indonesia) and international context.
46	CO2302	3	Social Statistics	This course introduces the basics of social statistics consisting of descriptive statistics and inferential statistics as a method for processing, analyzing, and interpreting numerical data about social phenomena. In addition, this course emphasizes how social research apply social statistics.
47	CO2303	3	Political Communication	This course discusses basic concepts and approaches in political science. Furthermore, this course will discuss various concepts, processes, and dimensions of political communication. The course will also discuss how political problems and political communication in Indonesia and various other countries develop by paying attention to the various channels of political messages used by political communicators. In addition, this course will sharpen students' analytical skills in critically viewing the phenomenon of political communication.