COURSE PORTFOLIO

Stereochemistry
Academic Year – 2020/2021

PLO 1	Able to apply religious attitudes, demonstrate an internalizing academic and human values
PLO 2	Able to demonstrate excellence, honesty, competitiveness, leadership, and possessing social sensitivity to society and the environment
PLO 3	Able to demonstrate performance independently or as part of a team professionally and measurably by applying interdisciplinary knowledge and skill, critical, and creative thinking in the context of being a lifelong learner
PLO 4	Able to communicate ideas, scientific research results clearly in oral or written format to scientists and the wider community
PLO 5	Able to Integrating mathematical and basic concepts of science to solve problems in chemistry
PLO 6	Able to master the knowledge of chemistry (organic chemistry, inorganic, analytical, physical, and biochemical
PLO 7	Able to understand concepts and applications in the field of biosciences and materials chemistry to solve problems in the field of chemistry and its applications
PLO 8	Able to understand operational knowledge about functions, how to operate chemical instruments, and analysis of data and information from these instruments
PLO 9	Able to understand work safety, ethics, environmental issues, and policies related to the chemical field
PLO 10	Able to carry out laboratory and research work by paying attention to the safety and security of laboratory work and applying responsible scientific behavior.
PLO 11	Able to obtain, process, interpret, and evaluate scientific data and produce conclusions by considering scientific and technological aspects and scientific ethics.
PLO 12	Able to solve science and technology problems in chemistry independently based on relevant scientific methodologies and present it as a scientific work.

Course Outcome (CO):

CO 1.	Understand the molecular conformation of alkanes and cycloalkanes
CO 2.	Understand the concept of axial-equatorial, alpha beta and geometric isomers in cyclic molecules, and their relationship to molecular stability
CO 3.	Understand about molecular chirality, describe and name the absolute configuration of chiral molecules

CO 4.	Understand the properties of the structure and relative configuration of carbohydrate molecules
CO 5.	Understand the structure of amino acids as building blocks of protein molecules
CO 6.	Understand the naming pattern and properties of the fatty acid that make up triglycerides
CO 7.	Understand about racemization of chiral compounds and how to separate them

Lecturers:

1. Dr. Fera Kurniadewi, M.Si.
2. Dr. Zulhipri, M.Si.
3. Dr. Hanhan Dainhar, M.Si.

Mapping Course Learning Outcome (CO) and Program Learning Outcome (PLO)

Program Learning Outcome / **Course Outcome**	PLO 3. Able to demonstrate performance independently or as part of a team professionally and measurably by applying interdisciplinary knowledge and skill, critical, and creative thinking in the context of being a lifelong learner	PLO 6. Able to master the knowledge of chemistry (organic chemistry, inorganic, analytical, physical, and biochemical)
CO 1. Understand the molecular conformation of alkanes and cycloalkanes	● (Assignment)	
CO 2. Understand the concept of axial-equatorial, alpha beta and geometric isomers in cyclic molecules, and their relationship to molecular stability	● (Assignment)	
CO 3. Understand about molecular chirality, describe and name the absolute configuration of chiral molecules		● (Assignment, Midterm Exam)
CO 4. Understand the properties of the structure and relative configuration of carbohydrate molecules		● (Assignment, Midterm Exam)
CO 5. Understand the structure of amino acids as building blocks of protein molecules		● (Assignment, Midterm Exam)

CO 6. Understand the naming pattern and properties of the fatty acid that make up triglycerides		● (Assignment, Final Exam)
CO 7. Understand about racemization of chiral compounds and how to separate them		● (Assignment, Final Exam)

Forms of Assessment

Assignment = 20%
Midterm examination = 40%
Final examination = 40%
Total = 100%

	PLO 3 Critical Thinking	**PLO 6 Problem Solving**
Assignment	30%	70%
Midterm examination	15%	85%
Final examination	15%	85%

Outcomes Assessment

No	**Name**	**Final Exam**	**Midterm Exam**	**Assignment**	**Final Grade and Score**	
1	A	82	65	100	83.8	A-
2	B	72	84	100	87.4	A
3	C	48	55	100	66.2	B-
4	D	66	53	100	72.6	B
5	E	68	61	100	76.6	B+
6	F	62	55	100	71.8	B
7	G	70	35	100	67	B-

8	H	62	46	100	68.2	B-
9	I	65	59	100	74.6	B
10	J	74	71	100	83	A-
11	K	62	66	100	76.2	B+
12	L	59	34	100	62.2	B-
13	M	71	68	100	80.6	B+
14	N	42	48	100	61	B-
15	O	66	51	100	71.8	B
16	P	71	68	100	80.6	B+
17	Q	65	51	100	71.4	B
18	R	74	59	100	78.2	B+
19	S	65	72	100	79.8	B+
20	T	80	46	100	75.4	B
21	U	67	67	100	78.6	B+
22	V	56	77	100	78.2	B+
23	W	66	50	100	71.4	B
24	X	71	42	100	70.2	B-
25	Y	57	51	100	68.2	B-
26	Z	68	45	100	70.2	B-
27	AA	59	47	100	67.4	B-
28	AB	28	37	100	51	B-
29	AC	62	46	100	68.2	B-
30	AD	86	48	100	78.6	B+
31	AF	54	46	100	65	B-
32	AG	65	65	100	77	B+
33	AH	82	74	100	87.4	A
34	AI	77	59	100	79.4	B+

35	AJ	64	63	100	75.8	B
36	AK	69	40	100	68.6	B-
37	AL	51	52	100	66.2	B-
38	AM	56	36	100	61.8	B-
39	AN	63	63	100	75.4	B
40	AO	70	58	100	76.2	B+
41	AP	62	60	100	73.8	B
42	AQ	67	44	100	69.4	B-
43	AR	57	28	100	59	B-
44	AS	63	58	100	73.4	B
45	AT	67	55	100	73.8	B
46	AU	63	52	100	71	B
47	AV	76	49	100	75	B
48	AW	68	68	100	79.4	B+

Calculation of Weight per PLO

Form of Assessment	Weight	Weight per PLO		Total	Total Weight	
		PLO 3	PLO 6		PLO 3	PLO 6
Assignment	0.20	0.30	0.70	1.00	0.06	0.14
Midterm Exam	0.40	0.15	0.85	1.00	0.06	0.34
Final Exam	0.40	0.15	0.85	1.00	0.06	0.34
Total	1.00	0.60	2.40	0.00	1.18	0.82

Example of PLO Calculation

No	Name	Assignment	Midterm Exam	Final Exam	Final Score and Grade	
1	A	100	65	82	83.8	A-

No	Name	PLO 3	PLO 6
1	A	(100*0.30) + (65*0.15) + (82*0.15) / 0.60 = 82.33	(100*0.70) + (65*0.85) + (82*0.65) / 2.40 = 78.02

PLO Assessment Rubric

PLO	Performance Criteria	Excellent (E)	Good (G)	Satisfy (S)	Fail (F)
3	Demonstrate performance independently or as part of a team professionally and measurably by applying interdisciplinary knowledge and skill, critical, and creative thinking in the context of being a lifelong learner	Students are able to demonstrate performance independently or as part of a team professionally and measurably by applying interdisciplinary knowledge and skill, critical, and creative thinking in the context of being a lifelong learner with a score of at least 80.	Students are able to demonstrate performance independently or as part of a team professionally and measurably by applying interdisciplinary knowledge and skill, critical, and creative thinking in the context of being a lifelong learner with a score of at least 70 and less than 80.	Students are able to demonstrate performance independently or as part of a team professionally and measurably by applying interdisciplinary knowledge and skill, critical, and creative thinking in the context of being a lifelong learner with a score of at least 60 and less than 70.	Students are able to demonstrate performance independently or as part of a team professionally and measurably by applying interdisciplinary knowledge and skill, critical, and creative thinking in the context of being a lifelong learner with a score of less than 60.
6	Able to master the knowledge of chemistry (organic chemistry, inorganic, analytical, physical, and biochemical)	Students are able to master the knowledge of chemistry (organic chemistry, inorganic, analytical, physical, and biochemical) with a score of at least 80.	Students are able to master the knowledge of chemistry (organic chemistry, inorganic, analytical, physical, and biochemical) with a score a score of at least 70 and less than 80.	Students are able to master the knowledge of chemistry (organic chemistry, inorganic, analytical, physical, and biochemical) with a score of at least 60 and less than 70.	Students are able to master the knowledge of chemistry (organic chemistry, inorganic, analytical, physical, and biochemical) with a score of less than 60.

Example of PLO Predicates for Each Student

No	Name	PLO 3	PLO 6
1	A	82.33 Excellent	78.02 Good

PLO Predicates for All Students

No	Name	Final Exam	Midterm Exam	Assignment	Final Grade and Score		PLO 3	PLO 6	PLO 3	PLO 6
1	A	82	65	100	83.8	A-	82.33	78.02	E	G
2	B	72	84	100	87.4	A	85.33	81.76	E	E
3	C	48	55	100	66.2	B-	67.67	59.78	S	F
4	D	66	53	100	72.6	B	73.00	66.41	G	S
5	E	68	61	100	76.6	B+	76.33	70.56	G	G
6	F	62	55	100	71.8	B	72.33	65.59	G	S
7	G	70	35	100	67	B-	68.33	60.61	S	S
8	H	62	46	100	68.2	B-	69.33	61.85	S	S
9	I	65	59	100	74.6	B	74.67	68.49	G	S
10	J	74	71	100	83	A-	81.67	77.20	E	G
11	K	62	66	100	76.2	B+	76.00	70.15	G	G
12	L	59	34	100	62.2	B-	64.33	55.63	S	F
13	M	71	68	100	80.6	B+	79.67	74.71	G	G
14	N	42	48	100	61	B-	63.33	54.39	S	F
15	O	66	51	100	71.8	B	72.33	65.59	G	S

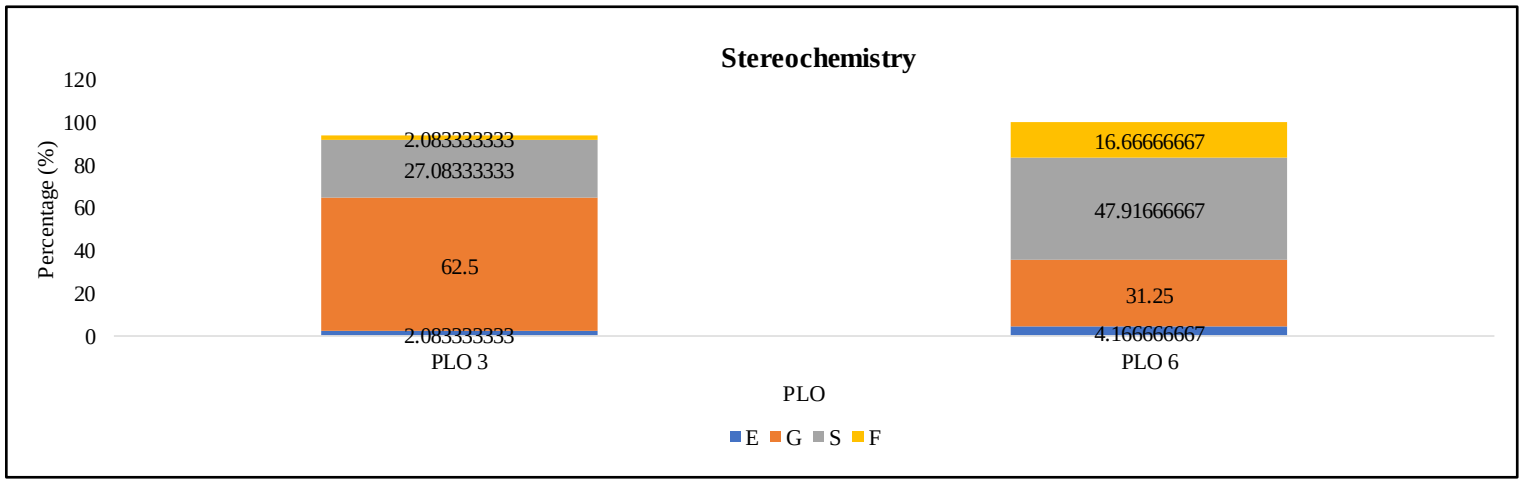
16	P	71	68	100	80.6	B+	79.67	74.71	G	G
17	Q	65	51	100	71.4	B	72.00	65.17	G	S
18	R	74	59	100	78.2	B+	77.67	72.22	G	G
19	S	65	72	100	79.8	B+	79.00	73.88	G	G
20	T	80	46	100	75.4	B	75.33	69.32	G	S
21	U	67	67	100	78.6	B+	78.00	72.63	G	G
22	V	56	77	100	78.2	B+	77.67	72.22	G	G
23	W	66	50	100	71.4	B	72.00	65.17	G	S
24	X	71	42	100	70.2	B-	71.00	63.93	G	S
25	Y	57	51	100	68.2	B-	69.33	61.85	S	S
26	Z	68	45	100	70.2	B-	71.00	63.93	G	S
27	AA	59	47	100	67.4	B-	68.67	61.02	S	S
28	AB	28	37	100	51	B-	55.00	44.02	F	F
29	AC	62	46	100	68.2	B-	69.33	61.85	S	S
30	AD	86	48	100	78.6	B+	78.00	72.63	G	G
31	AF	54	46	100	65	B-	66.67	58.54	S	F
32	AG	65	65	100	77	B+	76.67	70.98	G	G
33	AH	82	74	100	87.4	A	85.33	81.76	E	E
34	AI	77	59	100	79.4	B+	78.67	73.46	G	G
35	AJ	64	63	100	75.8	B	75.67	69.73	G	S
36	AK	69	40	100	68.6	B-	69.67	62.27	S	S
37	AL	51	52	100	66.2	B-	67.67	59.78	S	F
38	AM	56	36	100	61.8	B-	64.00	55.22	S	F
39	AN	63	63	100	75.4	B	75.33	69.32	G	S
40	AO	70	58	100	76.2	B+	76.00	70.15	G	G
41	AP	62	60	100	73.8	B	74.00	67.66	G	S
42	AQ	67	44	100	69.4	B-	70.33	63.10	G	S

43	AR	57	28	100	59	B-	61.67	52.32	S	F
44	AS	63	58	100	73.4	B	73.67	67.24	G	S
45	AT	67	55	100	73.8	B	74.00	67.66	G	S
46	AU	63	52	100	71	B	71.67	64.76	G	S
47	AV	76	49	100	75	B	75.00	68.90	G	S
48	AW	68	68	100	79.4	B+	78.67	73.46	G	G

Distribution of PLO Achievements

Grade	PLO 3	PLO 6
E	2.08333333	4.166666667
G	62.5	31.25
S	27.0833333	47.91666667
F	2.08333333	16.66666667

Achievement Percentage of PLO


Stereochemistry
120
100
80
60
40
20
0
Percentage (%)
2.083333333
27.08333333
62.5
2.083333333
16.66666667
47.91666667
31.25
4.166666667
PLO 3
PLO 6
PLO
E G S F