

COURSE SLO ASSESSMENT REPORT, SCC

Department: Earth, Space and Physical Sciences (Chemistry) Course: Chem 259

Year: 2011 Semester: Fall

1) Outcome to be assessed	A- Apply major concepts of chemical reactivity of organic compounds to solve problems
2) Means of assessment and criteria of success	SLO A will be assessed using a standardized year-long Organic Chemistry exam. We will compare our average to the national average. Success in achieving the SLO means having a score that is the national average or above. For the given version, the year-long organic chemistry exam 2008, the average was 39.48
3) Summary of data collected	The data was collected for 11 students Class average was 40.6. That average exceeds the national average so in general the class achieved the national average and as a class the SLO was achieved. Four out of the eleven students did not get above the national average. That is 36% did not achieve the SLO

Number	incorrect answers	% incorrect	Number	incorrect answers	% incorrect
1	2	18%	36	3	27%
2	5	45%	37	2	18%
3	6	55%	38	4	36%
4	4	36%	39	5	45%
5	0	0%	40	7	64%
6	5	45%	41	5	45%
7	6	55%	42	3	27%
8	6	55%	43	3	27%
9	5	45%	44	2	18%
10	3	27%	45	4	36%
11	4	36%	46	6	55%
12	9	82%	47	3	27%
13	4	36%	48	8	73%
14	4	36%	49	8	73%
15	7	64%	50	6	55%
16	5	45%	51	9	82%
17	0	0%	52	4	36%
18	9	82%	53	6	55%
19	1	9%	54	2	18%
20	5	45%	55	5	45%
21	4	36%	56	3	27%
22	4	36%	57	6	55%
23	2	18%	58	6	55%
24	7	64%	59	6	55%
25	7	64%	60	5	45%
26	1	9%	61	6	55%
27	2	18%	62	9	82%
28	7	64%	63	1	9%
29	4	36%	64	6	55%
30	9	82%	65	5	45%
31	3	27%	66	0	0%
32	6	55%	67	5	45%
33	5	45%	68	5	45%
34	2	18%	69	5	45%
35	1	9%	70	6	55%

4) Analysis of data	<p>Some of these questions more than 50% students missed:</p> <ul style="list-style-type: none">Question # 3 (tautomers)Question # 7 (dipole moment)Question # 8 (Chair conformation)Question # 12 (Basic amines)Question # 15 (Acidic hydrogens)Question # 18 (Number of chiral centers)Question # 24 (SN1 vs SN2)Question # 25 (aromatic nucleophilic substitution)Question # 28 (addition to carbonyl compds)Question # 30 (irreversible reactions)Question # 32 (Grignard reaction solvent)Question # 40 (aldol)Question # 46 (amine formation)Question # 48 (SN1 vs SN2)Question # 49 (B-ketoester hydrolysis)Question # 50 (antiperiplanar elimination)Question # 51 (OsO₄ action on alkenes)Question # 53 (benzylic halogenation)Question # 57 (alkyne to alkene reduction)Question # 58 (reduction of ketone with D₂O workup)Question # 59 (synthesis sequence)Question # 61 (synthesis sequence)Question # 62 (synthesis sequence)Question # 64 (carbocation rearrangement)Question # 70 (NMR question) <p>It looks from the topics that the students missed that most of their trouble is from first semester topics. This is an exam that covers both semesters and by the time they are finished in the semester, there is no time for review.</p>
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5) Plan of action/what to do next	Plan to review first semester topics and reactions along the way with introducing new concepts in first semester.
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1) Outcome to be assessed	B- Write in scientific terms and interpret patterns of reactivity on the basis of mechanistic reasoning			
2) Means of assessment and criteria of success	SLO B will be assessed using a mechanism and synthesis final exam. Success in achieving the SLO means having a 60% on that exam. A rubric was used to evaluate how they can draw a mechanism based on reactivity			
3) Summary of data collected	One section was assessed with 11 students.			
	A rubric was used to evaluate how they can draw a mechanism based on reactivity. Students were expected to identify the first step in a mechanism, draw arrows correctly and show each step with the correct electron flow and charges and reach the final product.			
		Students with 2 points	Students with 1 point	Students with 0 points
	Identifies the first step in the mechanism	11 (100%)	-	-
	Correctly identifies flow of electrons and shows the product of each step	8 (73%)	1 (9%)	2 (18%)
Draw a reasonable mechanism to show the formation of the final product	7 (64%)	1(9%)	3(27%)	

4) Analysis of data	From these initial results it looks like we have achieved more than 60% of the students drawing a valid complete mechanism. The full class (11 students) was able to identify the first step in the mechanism. About 70 % of the students were able to finish drawing the complete mechanism with all the details.
5) Plan of action/what to do next	The sample used for assessment is a very small sample. We will need to accumulate few more sections (over a couple of years) to obtain statistically valid data.