Neumann University Program Assessment Plan

Program Name: CHEMISTRY MINOR		**Submitted by: Science Work Group-Sarah Burke**
Division: ARTS AND SCIENCES		**3-Year Cycle Span: AY 201 -2021**

Student Learning Outcome Upon successful completion of the Chemistry Minor Program, the student will:	**LO 1 Demonstrate a comprehensive understanding of fundamental chemistry concepts.** **Bloom: Know, Comprehend**	**LO 2 Perform a range of laboratory procedures that includes the latest in technological advances.** **Bloom: Apply**	**LO 3 Practice the scientific method and critical thinking to solve chemical problems, both individually and collaboratively.** **Bloom: Apply & Evaluate**	**LO 4 Demonstrate effective communication skills in both written and oral formats.** **Bloom: Apply**
Core Learning Outcome(s):	**Comprehension**	**Comprehension**	**Comprehension** **Communication**	**Communication**
Related IDEA Objective(s):	CHEM 108: 1 (E) CHEM 211: 1 (E) CHEM 212: 1 (E) CHEM 312: 1 (E) BIO 450: 1 (E)	CHEM 118: CHEM 221: 1 (E); 4 (I) CHEM 222: 1 (E); 4 (I) CHEM 322: 4 (E) BIO 455: 1 (E), 4 (E)	CHEM 118: CHEM 211: 3 (E); 4 (I); 5 (I); 9 (I) CHEM 212: 3 (E); 4 (I); 5 (I); 9 (I) CHEM 221: 3 (E); 5 (I); 8 (I); 9 (I); 13 (E) CHEM 222: 3 (E); 5 (I); 8 (I); 9 (I); 13 (E) CHEM 312: 3 (E); 4 (I); 13 (I) CHEM 322: 3 (E); 5 (E); 10 (I) BIO 450: 3 (I), 4 (E) BIO 455: 3 (I), 4 (E), 5 (I)	CHEM 221: 8 (E) CHEM 222: 8 (E) CHEM 312: 5 (I); 8 (I) CHEM 322: 8 (I) BIO 450: 3 (I)
Course Mapping:	Formative: CHEM 108, CHEM 211, CHEM 212 Summative: CHEM 312, BIO 450	Formative: CHEM 322 Summative: BIO 455	Formative: CHEM 118, CHEM 221, CHEM 312 Summative: CHEM 222, BIO 455	Formative: CHEM 221 Summative: CHEM 222, BIO 450
Academic Year for Assessment:	**AY 18/19**	**AY 19/20**	**AY 19/20**	**AY 20/21**

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Formative Assessment	**CHEM 108**: Final Exam 70% of students will score 70% or above on the total score of a cumulative final exam **CHEM 211**: Final Exam 70% of students will score 70% or above on the total score of a cumulative final exam **CHEM 212**: Final Exam 70% of students will score 70% or above on the total score of a cumulative final exam	**CHEM 322**: Final Lab Practical 70% of students will score a 70% or above on the total score for the lab practical final exam	**CHEM 118:** Kinetic Equilibrium Experiment 70% of groups will determine the concentration of reactants and products at equilibrium **CHEM 221:** Thin Layer Chromatography of Analgesic Drugs Experiment 80% of students will correctly identify three unknowns analgesics using thin layer chromatography **CHEM 312**: Problem Set #1 70% of students will score 70% or above on a set of lecture-related application problems	**CHEM 221:** Isolation of Caffeine From Tea Leaves Formal Lab Report 60% of the students will score a 2 average (developing) or higher on the faculty-developed *laboratory report rubric* (as evaluated by one fulltime faculty rater)
Summative Assessment	**CHEM 312**: Final Exam 80% of students will score 70% or above on the total score of a cumulative final exam **BIO 450**: Final Exam 80% of students will score 70% or above on the total score of a cumulative final exam	**BIO 455**: Laboratory Practical Skills Test 80% of students will be score a 70% or above on a psychomotor evaluation	**CHEM 222**: UV-Vis Spectroscopy Experiment 90% of students will correctly identify three unknowns (organic acid, organic base, and neutral organic compound) using UV-Vis spectroscopy **BIO 455**: Final Exam 80% of students will score 70% or above on the total score of a cumulative final exam	**CHEM 222**: Esterification Formal Lab Report 70% of the students will score a 2 average (developing) or higher on the faculty-developed *laboratory report rubric* (as evaluated by one fulltime faculty rater) **BIO 450**: Primary Literature Oral Presentation 70% of the students will score a 3 or higher on the faculty-developed *oral presentation rubric* (as evaluated by one fulltime faculty rater)

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Indirect Evidence:	Student ratings on relevant objectives will be at or above the IDEA norm.	Student ratings on relevant objectives will be at or above the IDEA norm.	Student ratings on relevant objectives will be at or above the IDEA norm.	Student ratings on relevant objectives will be at or above the IDEA norm.

CHEMISTRY Minor Course List and Corresponding Assessment

COURSES	**FORMATIVE**	**SUMMATIVE**	**INDIRECT**	**LO**
CHEM 108 General Chemistry II	Final Exam	N/A	IDEA	1
CHEM 118 General Chemistry II Laboratory	Kinetic Equilibrium Experiment	N/A	IDEA	
CHEM 211 Organic Chemistry I	Final Exam	N/A	IDEA	1
CHEM 221 Organic Chemistry I Laboratory	Thin Layer Chromatography of Analgesic Drugs Experiment Isolation of Caffeine From Tea Leaves Formal Lab Report	N/A	IDEA	3, 4
CHEM 212 Organic Chemistry II	Final Exam	N/A	IDEA	1
CHEM 222 Organic Chemistry II Laboratory	N/A	UV-Vis Spectroscopy Experiment Esterification Formal Lab Report	IDEA	3, 4
CHEM 312 Biochemistry	Problem Set #1	Final Exam	IDEA	1, 3
CHEM 322 Biochemistry Laboratory	Final Lab Practical	N/A	IDEA	2
BIO 450 Clinical Biochemistry	N/A	Final Exam Primary Literature Oral Presentation	IDEA	1, 4
BIO 455 Clinical Biochemistry Laboratory	N/A	Final Exam Laboratory Practical Skills Test	IDEA	2,3