Valencia Campus Program Review Worksheet
for the Associate of Science in General Science Program
Contact Person: Elaine W. Clark

I. Mission:

This degree provides a pathway for students who are interested in the sciences, and allows them to explore various areas in the scientific realm.

II. Goals:

The degree program provides the first two years of study for a student who plans to transfer to UNM main campus or other four-year institutions to pursue a Bachelor's degree in one of the sciences. It prepares students to enter into any one of a number of fields of science or healthcare. Upon successful completion of the required courses for the Associate of Science in General Science, our students will demonstrate:

1. A broad-based knowledge of information and concepts in two of the following areas: Biology, Chemistry, or Physics.
2. The ability to apply the scientific method of inquiry, critically evaluate experimental design, and create and interpret numerical and graphical data.
3. The ability to apply scientific thinking to "real world" problems.

III. Program Assessment:

The program assessment of the General Science program is currently based on the abilities of students in biology, chemistry, and physics. This is reasonable because these are the three fields of study with prerequisite courses in most of the science and healthcare degrees. In the most recent Program Assessment report data was collected from Biology, Physics, and Chemistry exams and lab reports (see attached report).

During Spring 2017 the Program Assessment Plan was revised so that measures will be collected systematically and consistently across more of the disciplines represented in the program (see attached plan). Also, there is a plan to provide for "closing the loop" with all faculty teaching program courses so that program assessment goals are better met in the future.

IV. Trends:

The Associate of Science in General Science degree program began at UNM-Valencia in 1995. Since then it has become one of the primary degree programs at UNM-Valencia. In the last five years, however, the number of students declaring General Science as their degree program has gone down, as have those who graduated or officially transferred to UNM main campus (see attached table). Data was not available about how many transferred to other institutions or how many students moved to main campus but did not process an official transfer. Another trend that has occurred in the last few years has to do with the number of students who plan to be or are in our nursing program and need to graduate because they have enough credit hours. The advisors have asked for waivers to allow these students to receive the AS degree in General Science with more Biology classes and fewer Chemistry or Physics classes.

V. Funding:

Almost all of the mathematics and science courses listed in the program are core courses (all except Math 120) and transfer to main campus. A large part of the Science budget goes to support this program. Of the college-level mathematics and science courses offered at UNM-Valencia only the Nutrition, Natural Science,

Environmental Science, Earth and Planetary Science, and Astronomy courses are not officially part of this degree program. Of the 15 full-time and approximately 9 college-level adjunct faculty in the Science and Mathematics Division, 11 full-time and 6 adjunct faculty teach courses that are required in this program. Also, the Math 120, Math 121, Statistics 145, and Biology 111/112L are offered online.

VI. Articulation:

The current offerings here at UNM Valencia do feed into the various science and health-related degrees at UNM main campus (see attached matrix – thanks to Jaime Mayfield). However, in the current description of the program the two Biology sequences and the two Chemistry sequences do not align well with student needs and current main campus degree program requirements. Also, there is no provision made for those students who wish to major in sciences other than Biology, Chemistry, or Physics, or for those who are primarily interested in the health fields. There has been a suggestion to create pathways or concentrations within the degree program that more closely articulate into the degree programs at UNM main campus.

VII. Summary:

For the most part the General Science degree program "works," though with better articulation to current main campus course requirements, students' needs could be better met. It is recommended that the sequences be restructured to better accommodate those students who wish to pursue science degrees other than Biology or Chemistry and those who wish to pursue health-related degrees.

Part I: Cover Page
UNM Academic Programs Assessment Report Template
Record for Assessment of Student Learning Outcomes
The University of New Mexico

Title of Degree or Certificate Program	**Degree Level** *(Certificate, Associate, Bachelors, Master's, etc.)*
General Science	Associate

Name of Academic Department (if relevant): Mathematics, Engineering and Science

Name of College/School/Branch: Valencia

Academic Year/Assessment Period: 2014-2015

Submitted By (include email address): Miriam Chavez, mjchavez@unm.edu

Date Submitted to College/School/Branch for Review: 11-6-15

Date Reviewed by College Assessment and Review Committee (CARC) or the equivalent: 11-6-15

State whether ALL of the program's student learning outcomes (SLOs) are targeted/assessed/measured within one year, two years, OR three years: Three years

If the program's SLO's are targeted/assessed/measured within two years or three years, please state whether this assessment record focuses on SLOs from the first year, second year, or third year: Second year

Describe the actions and/or improvements that were implemented during the previous reporting period (provide relevant evidence): This outcome was not measured in the last cycle.

Part II: Assessment Report

Program Goal #1: Graduates of the ASGS degree program will demonstrate that they are prepared to succeed in a program to earn a B.S. in a scientific field.

Student Learning Outcomes	UNM Student Learning Goals (Knowledge, Skills, and/or Responsibility)	Assessment Measures incl. Measure Type (Direct or Indirect)*	Performance Benchmark	Data Results*	Data Analysis*	Recommendations for Improvement/ Changes*

Upon successful completion of the requirements for the ASGS degree, our students will demonstrate that they have developed the ability to apply information and concepts in two of the following areas: Biology, Chemistry, Physics	Knowledge and skills	A subset of exam questions will be evaluated (Direct)	75% or more of all students in the program will perform at 75% proficiency.	In two out of three class sections, the goal was not met, with an average success rate of 74.67% proficiency.	**BIOLOGY:** We allow individual faculty the freedom to design their own assessment tools. The problems students we required to solve were rigorous and genuinely allowed us to determine how prepared students were to apply quantitative analysis to scientific problems in Biology. **CHEMISTRY**: Students exceed expectations on applications 4-6. **PHYSICS:** The questions authentically assesses student ability to solve problems in physics scientifically.	**BIOLOGY:** We need to collect better data more systematically to truly reflect achievement of our students (75% will perform at 75% proficiency). Most of our data reflect 100% proficiency only. **I will continue to advocate that instructors to spend more time helping our students learn the fundamentals, *logic of scientific inquiry, biochemistry, cell biology, and genetics.*** We will devise a means to get better feedback from the other instructors for composing future reports. **CHEMISTRY**: Additions to the worksheet will be made to give students practice comparing bonds within molecules to each other. Additional worksheets will be created to help students appreciate concepts and processes during the instructional period. Data on other assessment tools, such as homework

						problems and lab activities will be included in the future to give a more comprehensive picture of student proficiency. **PHYSICS**: The difficulties experienced by the three students who were unable to deduce the correct answer have no common theme which would be a basis for changing how the topic of temperature is taught, so I will continue teaching the topic in the same way. [With such a small sample set, it is difficult to make substantial conclusions to direct future changes. More data will be collected and analyzed for patterns.]. Data on other assessment tools, such as homework problems and lab activities will be included in the future to give a more comprehensive picture of student proficiency.

Based on the data results and analysis provided for the student learning outcome(s) listed in the table above, for EACH student learning outcome, please state if the outcome was met, partially met, or not met. Briefly explain why: **Partially Met –the benchmark was met in only one section.**

Academic Program Assessment Plan - Associate of Science in General Science: AY 2016-2017

Expand the table below as needed for your program. Please enter all goals and outcomes for your program. You should assess all goals and outcomes within your assessment cycle. Each outcome chosen for assessment during each year should have at least 2 rounds of assessment during that year.

Academic Program Assessment Plan AS in General Science		**Date Submitted**	TBD
Department	Mathematics, Engineering, and Science	**Degree/Type**	Associate of Science/General Science

UNM Essential Learning Goals

UNM has established the following essential learning goals for all UNM students: University of New Mexico students will develop the following aptitudes and habits of mind in the course of their general and major study at UNM

- **KNOWLEDGE of human cultures and the natural world, gained through study in the sciences and mathematics, social sciences, humanities, histories, languages and the arts.**
- **SKILLS, both intellectual and applied, demonstrated in written and oral communication, inquiry and analysis, critical and creative thinking, quantitative literacy, information literacy, performance, teamwork and problem solving.**
- **RESPONSIBILITY, both personal and social, that will be manifested in civic knowledge and engagement, multicultural knowledge and competence, ethical reasoning and action, and foundations and skills for lifelong learning.**

Contact Person (name, title, email)	Elaine W. Clark, Associate Professor/Division Chair, ewclark@unm.edu	Date reviewed by CARC	TBD
Assessment Cycle (1-year/2-year/3-year)	3-year		
Program Goal #1	Graduates of the ASGS degree program will demonstrate a broad-based knowledge of information and concepts in two of the following areas: Biology, Chemistry, or Physics		

Student Learning Outcomes (In each row enter an SLO targeted at this Program Goal)	**Year of cycle in which this outcome will be assessed.**	**UNM Essential Learning Goal (Knowledge, Skills, Responsibility)**	**Assessment Measure including Direct/ Indirect (Provide a description of the assessment instrument used; include the course AND if it was direct or indirect)**	**Performance Benchmark (State the 'criteria for success' or performance target for meeting the SLO, i.e., at least 70% of students will perform with score of 70 or better)**
Student Learning Outcome	**Year of Cycle**	**UNM Essential Learning Goal**	**Assessment Measure**	**Performance Benchmark**
Upon successful completion of the requirements for the ASGS degree, students will be able to communicate scientific	Year 2	K, S, R	Direct 1: Final scores on an essay question, lab report, poster, or presentation in CHEM 121/123L or CHEM 122/124L.	At least 75% of students will perform with a final score on the in-class assessment of 75% or better for the direct measures.

information to scientists and/or the general public.			Direct 2: Final scores on an essay question, lab report, poster, or presentation in BIOL 201L or BIOL 202L. Direct 3: Final scores on an essay question, lab report, poster, or presentation in PHYC 152/152L or PHYC 161/161L. Indirect 1: Departmental question added to end-of-semester student course evaluations for CHEM 121/123L, CHEM 122/124L, BIOL 123/124L, PHYC 152/152L, and PHYC 161/161L Aligns with NM HED Area III: Competency 3	At least 80% of students will indicate they are Confident or Very Confident for the indirect measure.
Program Goal #2	Graduates of the ASGS degree program will demonstrate the ability to apply the scientific method of inquiry, critically evaluate experimental design, and create and interpret numerical and graphical data.			
Student Learning Outcomes (In each row enter an SLO targeted at this Program Goal)	**Year of cycle in which this outcome will be assessed.**	**UNM Essential Learning Goal (Knowledge, Skills, Responsibility)**	**Assessment Measure including Direct/ Indirect (Provide a description of the assessment instrument used; include the course AND if it was direct or indirect)**	**Performance Benchmark (State the 'criteria for success' or performance target for meeting the SLO, i.e., at least 70% of students will perform with score of 70 or better)**
Student Learning Outcome	**Year of Cycle**	**UNM Essential Learning Goal**	**Assessment Measure**	**Performance Benchmark**
Upon successful completion of the requirements for the ASGS degree, students will demonstrate the ability to interpret data that is represented graphically.	Year 1	K, S	Direct 1: Scores on up to three questions about graphical data from an exam or major assignment in CHEM 121/123L or CHEM 122/124L Direct 2: Scores on up to three questions about graphical data from an exam or major assignment in BIOL 201L or BIOL 202L. Direct 3: Scores on up to three questions about graphical data from an exam or major assignment in PHYC 152/152L or PHYC 161/161L. Indirect 1: Departmental question added to end-of-semester student course evaluations for CHEM 121/123L, CHEM 122/124L, BIOL 123/124L, PHYC 152/152L, and PHYC 161/161L Aligns with NM HED Area III: Competency 4	At least 75% of students will complete the selected questions on a course assessment at a 75% level or better for the direct measures. At least 80% of students will indicate they are Confident or Very Confident for the indirect measure.
Upon successful completion of the requirements for the ASGS degree, students will demonstrate the ability to gather data to test a hypothesis.	Year 1	K, S	Direct 1: Scores on up to two laboratory assignments in CHEM 123L or CHEM 124L, for which the students needed to collect data and assess the truth of a hypotheses.	At least 75% of students will complete the selected questions on a course assessment at a 75% level or better for the direct measures.

			Direct 2: Scores on up to two laboratory assignments in BIOL 201L or BIOL 202L for which the students needed to collect data and assess the truth of a hypotheses. Direct 3: Scores on up to two laboratory assignments in PHYC 152L or PHYC 161L for which the students needed to collect data and assess the truth of a hypotheses. Indirect 1: Departmental question added to end-of-semester student course evaluations for CHEM 123L, CHEM 124L, BIOL 124L, PHYC 152L, and PHYC 161L Aligns with NM HED Area III: Competency 2	At least 80% of students will indicate they are Confident or Very Confident for the indirect measure.
Program Goal #3	Graduates of the ASGS degree program will demonstrate the ability to apply scientific thinking to "real world" problems.			
Student Learning Outcomes (In each row enter an SLO targeted at this Program Goal)	**Year of cycle in which this outcome will be assessed.**	**UNM Essential Learning Goal (Knowledge, Skills, Responsibility)**	**Assessment Measure including Direct/ Indirect (Provide a description of the assessment instrument used; include the course AND if it was direct or indirect)**	**Performance Benchmark (State the 'criteria for success' or performance target for meeting the SLO, i.e., at least 70% of students will perform with score of 70 or better)**
Student Learning Outcome	**Year of Cycle**	**UNM Essential Learning Goal**	**Assessment Measure**	**Performance Benchmark**
Upon successful completion of the requirements for the ASGS degree, students will demonstrate the ability to critically evaluate scientific reports or accounts presented in the popular media, understand the basic scientific facts related to important contemporary issues, and ask informed question about those issues.	Year 3	K, S, R	Direct 1: Scores on a major assignment connected with evaluating the chemistry involved in a scientific report on a contemporary issue in CHEM 121/123L or CHEM122/124L. Direct 2: Scores on a major assignment connected with evaluating the biology involved in a scientific report on a contemporary issue in BIOL 201L or BIOL 202L. Direct 3: Scores on a major assignment connected with evaluating the physics involved in a scientific report on a contemporary issue in PHYC 152/152L or PHYC 161/161L. Indirect 1: Departmental question added to end-of-semester student course evaluations for CHEM 121/123L, CHEM 122/124L, BIOL 123/124L, PHYC 152/152L, and PHYC 161/161L. Aligns with NM HED Area III: Competency 5	At least 85% of students will use common laboratory equipment or instruments appropriately for the direct measure. At least 80% of students will indicate they are Confident or Very Confident for the indirect measure.

What is your plan for using assessment results?

Please answer the following questions, which are intended to support institutional effectiveness planning and enhance information gathering and sharing.

1. How will you use each year's assessment results to improve student learning or inform curricular decision making?	The chair and faculty will review results and suggested actions with the CARC, who will have provided feedback and a timeline of next steps.
2. How will you communicate assessment results to faculty who could use the information to make curricular decisions?	All faculty teaching in the program are made aware of the results by the division chair.
3. How will you determine whether program changes produced what you intended?	If the performance benchmark for a SLO is not met in a particular year, that learning objective will be added to the assessment for the immediately following year if it is not already included, and similar measures will be used to determine if there is improvement.
4. What processes do you have in place to ensure that annual assessment information is used to make curricular decisions?	A standing meeting of the division chair and appropriate faculty will occur every August at the beginning of the new academic year.

General Science Data

Academic Year	Majors	Female	Hispanic	Native American	White	Other	Unknown
2015-2016	468	364	326	12	96	24	10
2014-2015	488	398	341	10	115	14	8
2013-2014	528	418	348	10	140	21	9
2012-2013	564	426	376	5	163	14	6

Academic Year	Graduates	Transfers To Main		Continued in the program the following year			
2015-2016	23	17	SP16 to FA 16		?		
2014-2015	21	38	SP15 to FA 16		210		
2013-2014	32	34	SP14 to FA 16		262		
2012-2013	32	93	SP13 to FA 16		270		

AS General Science Transfer Matrix

College of A&S	BIOL 123/L	BIOL 201L	BIOL 202L	BIOL 237/L	BIOL 238/L	BIOL 239L	CHEM 111L	CHEM 121/L	CHEM 122/L
BS, Biochemistry		X	X					X	X
BS, Biology		X	X					X	X
BS, Chemistry								X	X
BS, EPS								X	X
BS, Envs	X							X	X
BS, Physics								X	X

College of Ed									
BS, Athletic Train	X			X	X		X		
BS, Exercise Sci	X			X	X			X	X
BS, Nutrition	X			X	X	X		X	X

College of Pharm									
D, Pharm		X	X	X (NO LAB)	X (NO LAB)	X		X	X

School of Med									
BS, Dental Hyg.	X			X	X	X	X		
BS, Med Lab Sci	X	X		X	X	X		X	X

School of Nursing									
BS, Nursing (BSN)	X			X	X	X	X		

AS General Science Transfer Matrix

College of A&S	CHEM 212	PHYC 151/L	PHYC 152/L	PHYC 160/L	PHYC 161/L	NUTR 244	MATH 121	MATH 162	MATH 163
BS, Biochemistry		X	X					X	X
BS, Biology		X (NO LAB)	X (NO LAB)						
BS, Chemistry				X	X			X	X
BS, EPS				X (NO LAB)	X (NO LAB)			X	X
BS, Envs				X (NO LAB)	X (NO LAB)		X	X	X
BS, Physics				X	X			X	X

College of Ed									
BS, Athletic Train						X	X		
BS, Exercise Sci	X	X (NO LAB)				X	X		
BS, Nutrition						X	X		

College of Pharm									
D, Pharm		X (NO LAB)	X (NO LAB)			Opt.			

School of Med									
BS, Dental Hyg.	X					X			
BS, Med Lab Sci	X						X		

School of Nursing									
BS, Nursing (BSN)						X			

AS General Science Transfer Matrix

College of A&S	MATH 180	MATH 181	STAT 145
BS, Biochemistry			
BS, Biology	X	X	
BS, Chemistry			
BS, EPS			
BS, Envs			
BS, Physics			

College of Ed			
BS, Athletic Train			X
BS, Exercise Sci			X
BS, Nutrition			X

College of Pharm			
D, Pharm	X	Opt.	X

School of Med			
BS, Dental Hyg.			X
BS, Med Lab Sci			X

School of Nursing			
BS, Nursing (BSN)			X