



GENERAL SCIENCE  
Associate of Science Degree  
2016/2017



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## Program General Science

Hours for Degree here

### Program Goals

The program is focused on the fundamentals of science and is designed to be flexible in preparing students for upper division studies at the university. Through proper advising and course selection, students can use the General Science degree to pursue many diverse science fields.

### 2015/18 Curriculum Profile

Place here and also link to the location on the Luna website.

[https://luna.edu/gen\\_science/](https://luna.edu/gen_science/)

#### General Education Core (25 hours)

##### AREA I. COMMUNICATIONS (9 HOURS)

<b><u>ENG111</u></b>	Freshman Composition I	3 credits
<b><u>ENG115</u></b>	Freshman Composition II	3 credits
<b><u>SPCH111</u></b>	Public Speaking	3 credits

##### AREA II. MATHEMATICS (4 HOURS)

<b><u>MATH180</u></b>	College Algebra	4 credits
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##### AREA IV. SOCIAL AND BEHAVIORAL SCIENCES (6 HOURS)

##### AREA V. HUMANITIES AND FINE ARTS (6 HOURS)

#### Program Requirements (7 hours)

<b><u>STEM105</u></b>	Computer Use for Scientific Research	3 credits
<b><u>STEM117</u></b>	Introduction to Engineering	3 credits
<b><u>STEM250</u></b>	STEM Capstone	1 credit

Approved Electives (28 hours)

<b><u>BIO105</u></b>	Biology for Non-Majors	4 credits
<b><u>BIO110</u></b>	General Biology I	4 credits
<b><u>BIO111</u></b>	General Biology II	4 credits
<b><u>BIO201</u></b>	Medical Microbiology	4 credits
<b><u>BIO217</u></b>	Human Anatomy and Physiology I	4 credits
<b><u>BIO218</u></b>	Human Anatomy and Physiology II	4 credits
<b><u>CHEM105</u></b>	Introduction to Chemistry	4 credits
<b><u>CHEM111</u></b>	General Chemistry I	4 credits
<b><u>CHEM112</u></b>	General Chemistry II	4 credits
<b><u>ENVS102</u></b>	Environmental Science	4 credits
<b><u>GEOL101</u></b>	Survey of Earth Science	4 credits
<b><u>GEOL202</u></b>	Earth History	4 credits
<b><u>MATH190</u></b>	Trigonometry	4 credits
<b><u>MATH195</u></b>	Calculus I	4 credits
<b><u>MATH212</u></b>	Calculus II	4 credits
<b><u>MATH213</u></b>	Calculus II	4 credits
<b><u>PHYS111</u></b>	Introduction to Physics	4 credits
<b><u>PHYS115</u></b>	General Physics I	4 credits
<b><u>PHYS116</u></b>	General Physics II	4 credits
<b><u>PHYS161</u></b>	Calculus Physics I	4 credits
<b><u>PHYS162</u></b>	Calculus Physics II	4 credits

### Program Map (link also to website)

The program map marks courses that are scheduled by semester in order to complete this degree within two years (or one year if applicable). Refer to Appendix A for the program map.

No link to website

## General Science: Associate of Applied Science Degree Program Map

The General Science degree program is an interdisciplinary degree track that can lead to an advance degree in medicine, research, teaching or related field. The program is focused on the fundamentals of science and is designed to be flexible in preparing students for upper division studies at the university. Through proper advising and course selection, students can use the General Science degree to pursue many diverse science fields. Students should be familiar with the admission requirements of the university they plan to attend.

Degree Requirements Credit Hours: 60 - (General Education Core -25 credit hours)

Term 1/Fall Semester	Credits	Term 2/ Spring Semester	Credits
<b>ENG111 Freshman Composition I</b>	3	<b>ENG115 Freshman Composition II</b>	3
<b>MATH180 College Algebra</b>	4	<b>Humanities and Fine Arts</b>	3
<b>Humanities and Fine Arts</b>	3	<b>STEM105 Computer use for Scientific Research</b>	3
<b>Social and Behavioral Science</b>	3	<b>Social &amp; Behavioral Science</b>	3
<b>Elective</b>	3	<b>Elective</b>	3
<b>Semester Total</b>	<b>16</b>		<b>15</b>
<b>Milestones</b>		<b>Milestones</b>	
Complete all Term 2 courses with a letter "C" grade or better		Complete all Term 3 courses with a letter "C" grade or better	
Meet with Advisor		Meet with Advisor	
Accumulate 45 or more credits		Apply for graduation	
Maintain a 2.0 GPA or Higher		Accumulate 60 or more Credits	
Enroll in Term 4		Maintain an overall 2.0 GPA or higher	
		Graduate with an Associates, consider transfer to 4 year college or university	

**First Academic Year 31 total credit hours**

## General Science: Associate of Applied Science Degree

### Program Map

Term 3/ Fall Semester	Credits	Term 4 / Spring Semester	Credits
Introduction to Engineering	3	STEM250 STEM Capstone	1
SPCH111 Public Speaking	3	Elective	4
Social and Behavioral Science	3	Elective	4
Elective	4	Elective	4
Elective	3		
<b>Semester Total</b>	<b>16</b>	<b>Semester Total</b>	<b>13</b>
Milestones		Milestones	
Complete all Term 2 courses with a letter "C" grade or better		Complete all Term 3 courses with a letter "C" grade or better	
Meet with Advisor		Meet with Advisor	
Accumulate 45 or more credits		Apply for graduation	
Maintain a 2.0 GPA or Higher		Accumulate 60 or more Credits	
Enroll in Term 4		Maintain an overall 2.0 GPA or higher	
		Graduate with an Associates, consider transfer to 4 year college or university	

### Second Academic Year 29 total credit hours

\* It is highly recommended that students needing remedial courses utilize the summer semester to continue on a program map. This would allow students to complete their program of study within the traditional two academic years.

## Professional Development

List PD if it pertains specifically to meeting needs in this program; otherwise use PD at department level to identify all PD.

## Courses Offered by Semester

### Fall 2017 By Course

Course	# of Sections	Credit	# Students Enrolled	Student Credit Hours
STEM 105	1	3	7	21
STEM 250	1	1	3	3
BIO 105	2	4	31	124
BIO 110	2	4	31	124
BIO 216	1	4	6	24
CHEM 105	1	4	15	60
CHEM 111	1	4	6	24
ENVS 102	1	4	17	68
GEOL 101	1	4	15	60

### Spring 2018 By Course

Course	# of Sections	Credit	# Students Enrolled	Student Credit Hours
STEM 117	1	3	8	24
STEM 250	1	1	6	6
BIO 105	3	4	47	188
BIO 110	1	4	8	32
BIO 111	1	4	10	40
CHEM 105	1	4	13	52
CHEM 111	1	4	10	40
CHEM 112	1	4	9	36
ENVS 102	1	4	12	48
PHYS 111	1	4	6	24
PHYS 116	1	4	4	16

### Summer 2018 By Course

Course	# of Sections	Credit	# Students Enrolled	Student Credit Hours
BIO 105	1	4	5	20
CHEM 105	1	4	8	32
GEOL 101	1	4	4	16
STEM 101	1	4	3	12

### Student Graduation (Three-Year Annual Trend)

2015/2016	2016/2017	2017/18
4	5	6

### Synopsis of Significant Findings

### Program Improvement Plans Implemented or In-Progress

### Student Advisement by Semester

Get Advisement report from advisors and gather essential and relevant (program) info. for this section.

### Yearly Return on Investment

Costs for instruction are listed by course.

#### Revenue

Course Name	#of Credits	#of Students	SCH	Tier \$	Tier Funding Tot	Tuition \$40	Total Revenue
STEM 105	3	7	21	\$133			(\$4,811.33)
STEM 250	1	9	9				(\$557.83)
STEM 101	4	3	12				(\$6,359.33)
BIO 105	4	83	332				\$48,680.676
BIO 110	4	39	156				\$18,408.67
BIO 111	4	10	40				(\$1,543.33)
BIO 216	4	6	24				(\$4,295.33)
CHEM 105	4	37	148				\$17,032.67
CHEM 111	4	16	64				\$2,584.67
CHEM 112	4	9	36				(\$2,231.33)
ENVS 102	4	29	116				\$11,528.67
GEOL 101	4	19	76				\$4,648.67
STEM 101	4	3	12				(\$6,359.33)

#### Costs

Course Name	Instructor Salary	Fringe	Operational Costs (63 and 64 codes)	Total Costs





<Include Class Cost Per Student (e.g., Revenue-Costs/students enrolled)>

<Include Cost per Graduate (e.g., Revenue-Costs/students graduated this year)>

### **Program Learning Assessment Plan (Weave)**

Appendix B provides the program assessment of learning plan created by the faculty.

### **Student Alumni**

This is very problematic in that Program databases do not exist, nor should they be the responsibility of the program or Department. Tracking graduates and establishment of databases would require additional personnel. The tracking and maintenance of graduate records is usually undertaken and reported by other institutional entities, such as College Foundations or other entities.

### **Curriculum Committee Work (Link)**

<The following courses were submitted to the curriculum committee to align them with NM articulation agreements. Explain what, when, how it changed the program>

### **Final Program Approvals (Board of trustees) approvals to move program forward**

<Final approvals from VP/ President and board of trustees meeting.>

### **Accreditation**

Institutional HLC accreditation.

### **Evaluation of the Program**

#### **Summary**

In evaluating the General Science program, it is evident that the program and, general science classes in general, there is an explicit need to increase student enrollment in order to increase revenue. The lack of adequate laboratory facilities is quite evident in the fact that the laboratory can accommodate only ten (10) students per session. Adding more laboratory sessions is problematic in that the instructors are at their maximum instruction hours allowed (18). The idea of having larger sessions of the General Biology and General Chemistry lecture sections with multiple laboratory sections is certainly a problem in that the four (4) credit hour sections include the laboratory as inclusive with the lecture session. The combined lecture and laboratory does not allow for the separation, or creation of, multiple laboratory sections. At the department level, it is not only problematic, but nearly impossible to implement a "team teaching" approach in separating the laboratory from the lecture by adding more instructors, in other words there is problem in separating the course credit hours to implement instructional pay. Aside from the problem of limited class size in the general section classes, the General Science program is very well positioned to fulfill its mission with the STEM Department.



## Appendix A: Program and Student Assessment of Learning

<Academic Program Plan and SLO assessment goes here. Pull from WEAVE.>

# LCC Academic General Science AS PLO Assessment Plan

2017-2018

Internal Review

## Program Mission Statement

Preparing students for careers or further academic study in science, technology, engineering mathematics (STEM) and STEM education and imparting core knowledge in science and mathematics to all students. Serving the citizens of New Mexico with educational programs that facilitate enhanced opportunities for STEM related innovation and economic development.

## Program Goal

### 1 General Science

Program Description: The overall goal of the general science program is to provide students with first two-years of general education core and a diverse offering of introductory science courses to prepare the students for transfer to the university in any of the life or physical science fields of study. Year 1 This three-year plan(2017/18, 2018/19, 2019/20) will evaluate the following three PLOs and two general education PLOs: 1. Develop a conceptual idea or hypothesis into a rigorous scientific experiment- demonstrate and communicate a working knowledge the scientific method. 2. Demonstrate theoretical knowledge of physical/biological phenomena found in the natural world. 3. Demonstrate competent laboratory skills. The courses being used to assess these PLO's are: STEM 250 General Chemistry I General Biology I Gen Ed: Communication, critical thinking, and quantitative reasoning.

## Program Learning Outcomes

- \*Develop a conceptual idea or hypothesis into a rigorous scientific  
1.1 experiment demonstrate and communicate a working knowledge the  
scientific method

Description

Students are required to research a given topic, conduct an experiment to around the given topic, and to write a report based on that topic.

## Supported Initiatives (4)

### General Education

- Communication- i.e. Written documents, oral and/or electronic presentations, digital assignments, portfolio, etc.
- Critical Thinking- i.e. Problem solving, analyze, explanation, argument, experiment, research, etc.
- Information & Digital Literacy- i.e. Essay, speech, research, presentation, computer skills, blogs, websites, etc.
- Quantitative Reasoning- i.e. Laboratory reports, exam, project, critique, written assignment

### Action Plan

Planned

Instructor will modify PowerPoint and assignments provided from by the textbook. The chapter reviews will be composed of concept checks and assignments. This PLO will also be measured by laboratory experiments and two practical exams. The students will also have a pre and post tests to measure the students knowledge before and after the class.

Due Date

12/14/2018

#	Action Item	Date Created	Due Date	Status
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1	The laboratory needs improvement such as new hoods, new glassware, a new autoclave, and bio-hazard hood.	5/25/2018		
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### PLO Assessment Method

#### 1.1.1 Chem 111 General Chemistry I

Source of Evidence

Laboratory Work - Academic Direct

#### Description

This PLO will be measured through a series of laboratory experiments, maintaining a laboratory notebook and the writing of a report based around the topic.

Describe the assessment method and Course used to assess this PLO.

This course is designed to give students a basic understanding of the fundamental concepts of chemical calculations, organic and inorganic nomenclature, chemical reactions, gases, atomic structure, electron configuration, periodicity, oxidation-reduction reactions, and chemical bonding.

#### Benchmark/Target

**1.1.1.1** Not Reported this Cycle

#### Benchmark/Target

Benchmark: In lab practical exams that students have to pass with a 70% or better.

Target have 50% of students pass with a 80% or better.

#### Finding

#### Analysis of Finding

#### Improvement Type

#### Improvement Description

#### Improvement

**1.2**

**\*Demonstrate theoretical knowledge of physical/biological phenomena found in the natural world**

#### Description

Students are required to understand the physical aspects to the universe along with some of the biological implications of those phenomena in the natural world. These demonstrations will come in the form of passing benchmarks including passing assignments and exams with 70% or better. Also with continuous work on class practice problems.

#### **Supported Initiatives (4)**

#### **General Education**

- Communication- i.e. Written documents, oral and/or electronic presentations, digital assignments, portfolio, etc.
- Critical Thinking- i.e. Problem solving, analyze, explanation, argument, experiment, research, etc.
- Information & Digital Literacy- i.e. Essay, speech, research, presentation, computer skills, blogs, websites, etc.
- Quantitative Reasoning- i.e. Laboratory reports, exam, project, critique, written assignment

### Action Plan

#### Planned

Instructor will modify PowerPoint and assignments provided from by the textbook. The chapter reviews will be composed of concept checks and assignments. This PLO will also be measured by three in class exams and one final, along with assignments that are given to the students weekly.. The students will also have a pre and post tests to measure the students knowledge before and after the class.

#### Due Date

12/14/2018

### PLO Assessment Method

#### 1.2.1 General Biology I

##### Source of Evidence

In-Class Exercise - Academic Direct

##### Description

This PLO is also tested through laboratory course work and practical laboratory exams, in class exams and through in class demonstrations.

Describe the assessment method and Course used to assess this PLO.

This course is designed to introduce the fundamental concepts of biology with consideration of the diversity of life, the origins of species, evolution, and ecology.

### Benchmark/Target

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### 1.2.1.1 Not Reported this Cycle

Benchmark/Target

Benchmark:m students have to pass in class and practical exams with a 70% or better.

Target: to have 50% of students pass with 80% or better.

Finding

Analysis of Finding

Improvement Type

Improvement Description

Improvement

### 1.3 \*Demonstrate competent laboratory skills

Description

Students are required to have an understanding of lab safety and how to develop and conduct lab experiments to gain a better understanding of give topics and to gain hands on experience in a laboratory setting

#### **Supported Initiatives (3)**

##### **General Education**

- Quantitative Reasoning- i.e. Laboratory reports, exam, project, critique, written assignment
- Communication- i.e. Written documents, oral and/or electronic presentations, digital assignments, portfolio, etc.
- Critical Thinking- i.e. Problem solving, analyze, explanation, argument, experiment, research, etc.

#### **Action Plan**

Planned

Instructor will modify PowerPoint and assignments provided from by the textbook. This PLO will also be measured by laboratory experiments and two practical exams. The students will also have a pre and post tests to measure the students knowledge before and after the class.

Due Date  
12/14/2018

## PLO Assessment Method

### 1.3.1 General Chemistry I

Source of Evidence

Laboratory Work - Academic Direct

Description

This is tested thought laboratory excersizes and laboratory practical exams.

Describe the assessment method and Course used to assess this PLO.

## Benchmark/Target

### 1.3.1.1 Not Reported this Cycle

Benchmark/Target

Benchmark: Students have to pass the laboratory with a 70% or better to pass the class. Target: to get all students to pass laboratory with a 85% or better.

Finding

Analysis of Finding

Improvement Type

Improvement Description

Improvement

## Project Attachments

Attachments (3)	File Size	Last Modified
<a href="#">capstone final reivew .pdf</a>	402KB	MAY 17, 2018
<a href="#">LCC Curriculum and GenED Gen Science Course - GenEd.pdf</a>	56KB	MAY 17, 2018
<a href="#">LCC Curriculum and GenED Gen Science PLO-CLO.pdf</a>	48KB	MAY 17, 2018



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2017-2018

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Planned

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### PLO Assessment Method

#### 1.1.1 Chem 111 General Chemistry I

Source of Evidence

Laboratory Work - Academic Direct

#### Description

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Describe the assessment method and Course used to assess this PLO.

This course is designed to give students a basic understanding of the fundamental concepts of chemical calculations, organic and inorganic nomenclature, chemical reactions, gases, atomic structure, electron configuration, periodicity, oxidation-reduction reactions, and chemical bonding.

#### Benchmark/Target

##### 1.1.1.1 Not Reported this Cycle

#### Benchmark/Target

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#### Analysis of Finding

#### Improvement Type

#### Improvement Description

#### Improvement

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#### Description

Students are required to understand the physical aspects to the universe along with some of the biological implications of those phenomena in the natural world. These demonstrations will come in the form of passing benchmarks including passing assignments and exams with 70% or better. Also with continuous work on class practice problems.

#### Supported Initiatives (4)

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##### Source of Evidence

In-Class Exercise - Academic Direct

##### Description

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Describe the assessment method and Course used to assess this PLO.

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Improvement Type

Improvement Description

Improvement

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##### **General Education**

- Quantitative Reasoning- i.e. Laboratory reports, exam, project, critique, written assignment
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Due Date  
12/14/2018

## PLO Assessment Method

### 1.3.1 General Chemistry I

Source of Evidence

Laboratory Work - Academic Direct

Description

This is tested through laboratory exercises and laboratory practical exams.

Describe the assessment method and Course used to assess this PLO.

## Benchmark/Target

### 1.3.1.1 Not Reported this Cycle

Benchmark/Target

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