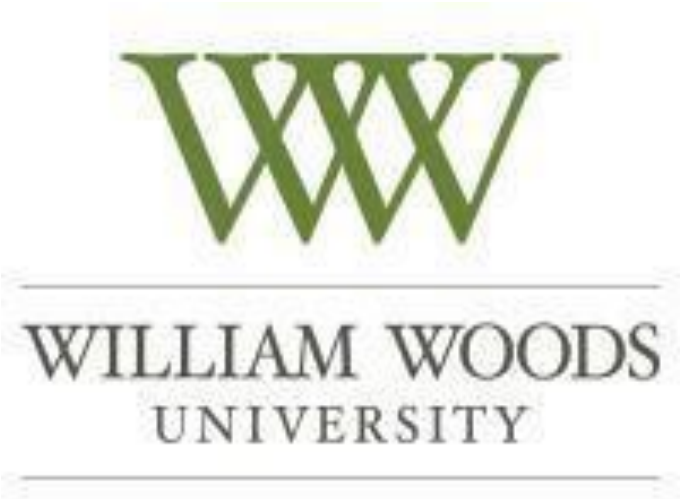

Physical Science Annual Assessment 17-18

Annual Assessment 17-18

Physical Science

Program Profile

Program Mission Statement
Please insert your program mission statement here

The physical science minor seeks to expose students to a broad range of fields within the physical sciences. It provides them with hands-on laboratory experience, practical problem-solving skills, and a conceptual understanding of the physical world. It puts the scientific method into action during an independent research project. By presenting their findings, students learn to think analytically and communicate scientifically.

Program Data

Delivery Method

Traditional On Campus (selected)
Online
Hybrid

	Minors	Majors
2017-18	18	N/A
2016-17	16	N/A

Concentrations 2016-17
If your program contains concentrations, please list the concentrations and the number of students identified within each concentration.

N/A

Concentrations 2017-18
If your program contains concentrations, please list the concentrations and the number of students identified with each concentration.

N/A

Student Demographics
Program goals for student retention, persistence and degree completion are? What do the persistence numbers mean to the faculty in the program? Are your persistence numbers what you expected? If not, how could the numbers be

improved? What is the optimal enrollment for the program?

The physical science minor program has the following retention goals for the upcoming academic year:

1. At least 90% of students who declare the minor will finish the program prior to graduation.
2. At least 4 students will declare the physical science minor each year.

It is also anticipated that this program will not increase the time to degree for students in other major programs. Students who declare a physical science minor will be expected to graduate within the standard four-year period which is planned for most students. Any physical science minors requiring additional time will be evaluated on an individual basis to determine whether the program contributed to the need for additional semesters of study. If this is found to be the case, further assessment will be conducted. To date, the program has not delayed any student graduation schedules.

Previous enrollment goals were too high, projecting too much of a burden on faculty, and have since been reduced. The optimal enrollment in this program is approximately 16 students. This is mostly because each student must complete an independent research project with one of two faculty members. Overseeing more than two of these projects per semester is overly burdensome for faculty. Current enrollment in the program is satisfactory.

Is the Program Externally Accredited

Yes
No (selected)

External Accreditation
Name the Accrediting Agency or entity including the last review/approval. Is there an accrediting body for the field of study? If yes, what is the name of the group. Is the program seeking accreditation?If no, why?

There is no accrediting body for this type of program of which I am aware.

There are currently no plans for outside accreditation for this program as it is a minor program and was recently revised significantly. Once the program has completed multiple academic cycles in its current form, the option may be explored further.

Program Assessment

Standard/Outcome

Identifier	Description
WWU2016.1	Major Field Competence: Students will demonstrate excellence in an academic or professional discipline, and engage in the process of academic discovery.
WWU2016.2	Ethics: Students will exhibit values and behaviors that address self- respect and respect for others that will enable success and participation in the larger society.
WWU2016.3	Self-Liberation: Students will develop an honest understanding and appreciation of themselves and others resulting in an ability to make individual decisions.
WWU2016.4	Lifelong Education: Students will possess an intellectual curiosity and desire for continual learning both within and beyond formal education in preparation for participation in a global society.

Additional Standards/Outcomes

Identifier	Description

SCI.1	Students will develop a functional understanding of the physical sciences and the fundamental laws governing the world around them.
SCI.2	Students will obtain familiarity with the scientific method and the processes involved in proposing and answering an original research question.
SCI.3	Students will improve their mathematical skills and learn to develop and interpret accurate models predicting the behavior of complex systems.
SCI.4	Students will acquire an appreciation for the seminal discoveries and technological advances resulting from scientific theories.

General Education Alignment to Program
How do the General Education criteria align with the Program Objectives? What courses within your program build upon skills learned in general education courses (please list the program course and the general education criteria). The General Education clusters are: Critical Analysis, Creative Expression, Quantitative Inquiry, and Society & the Individual. See attached for more detailed breakdown.

This program compliments several objectives from the general education program, mostly in the 'Quantitative Inquiry' cluster. In PHY 201 - Physics I, students develop and practice quantitative problem-solving skills when completing course homework assignments. In CHM 115 - General Chemistry Lab, students analyze and evaluate information in a larger context when completing laboratory assignments. Students are given lab manuals and are expected to read instructions, perform preliminary calculations, and apply concepts from the lecture in order to conduct their experiment. These skills are consistent with the GE description for the natural sciences.

The program also builds on skills developed in the 'Critical Analysis' cluster. Students are expected to apply logical and analytical reasoning skills to diverse source material when they conduct literature reviews for SCI 300 - Independent Research. Before beginning their guided scientific research, students are expected to review several scholarly articles in order to determine their project's direction. These skills build upon and are consistent with the description given for critical thinking.

GE_Cluster_Descriptions_FINAL_Version_Approved.docx

Curriculum Map

A - Assessed
R - Reinforced
I - Introduced
M - Master

Physical Science Minor(Imported)

	PHY 201	**PHY 202**	**CHM 114**	**CHM 115**	**SCI 230**	**PHY 212**
SCI.1 Students will develop a functional understanding of the physical sciences and the fundamental laws governing the world around them.	I, A		R		R	
SCI.2 Students will obtain familiarity with the scientific method and the processes involved in proposing and answering an original research question.		I, A		R		
SCI.3 Students will improve their mathematical skills and learn to develop and interpret accurate models predicting the behavior of complex systems.	I		R		R	A

SCI.4 Students will acquire an appreciation for the seminal discoveries and technological advances resulting from scientific theories.	A, I		R		R	

	PHY 213	CHM 124	CHM 125	SCI 300
SCI.1 Students will develop a functional understanding of the physical sciences and the fundamental laws governing the world around them.		I		
SCI.2 Students will obtain familiarity with the scientific method and the processes involved in proposing and answering an original research question.	R		R	M, A
SCI.3 Students will improve their mathematical skills and learn to develop and interpret accurate models predicting the behavior of complex systems.	A	R		
SCI.4 Students will acquire an appreciation for the seminal discoveries and technological advances resulting from scientific theories.	A			

Assessment Map

Assessment Map for Physical Science Minor(Imported)

SCI.1 Students will develop a functional understanding of the physical sciences and the fundamental laws governing the world around them.

PHY 201		
Assessment Measure	**Criterion**	**Attachments**
Direct - Class Assignment	Mastering Physics 85% of students will achieve an overall homework score of >85%.	

SCI.2 Students will obtain familiarity with the scientific method and the processes involved in proposing and answering an original research question.

PHY 202		
Assessment Measure	**Criterion**	**Attachments**
Direct - Observation Report	Lab Reports At least 90% of students will attend all labs and successfully complete the reports.	

SCI 300		

Assessment Measure	Criterion	Attachments
Direct - Presentation	Oral Presentation All students will receive a minimum score of 90% on their oral presentations.	

SCI.3 Students will improve their mathematical skills and learn to develop and interpret accurate models predicting the behavior of complex systems.

PHY 212		
Assessment Measure	**Criterion**	**Attachments**
Direct - Quiz/Exam	Essay Questions At least 85% of students will achieve an overall homework score of >85%.	

PHY 213		
Assessment Measure	**Criterion**	**Attachments**
Direct - Presentation	Lab Assignments A minimum class average of 95% on all lab reports.	

SCI.4 Students will acquire an appreciation for the seminal discoveries and technological advances resulting from scientific theories.

PHY 201		
Assessment Measure	**Criterion**	**Attachments**
Direct - Quiz/Exam	Essay Questions An average quiz score of >80% for the class.	

PHY 213		
Assessment Measure	**Criterion**	**Attachments**
Direct - Observation Report	Lab Report An average score of 85% on the student-designed experiment.	

Assessment Findings

Assessment Findings for the Assessment Measure level for Physical Science Minor(Imported)

SCI.1 Students will develop a functional understanding of the physical sciences and the fundamental laws governing the world around them.

PHY 201				
Assessment Measure	**Criterion**	**Summary**	**Attachments of the Assessments**	**Improvement Narratives**
Direct - Class Assignment	Has the criterion Mastering Physics 85% of students will achieve an overall homework score of >85%. been met yet?			

SCI.2 Students will obtain familiarity with the scientific method and the processes involved in proposing and answering an original research question.

PHY 202				
Assessment Measure	**Criterion**	**Summary**	**Attachments of the Assessments**	**Improvement Narratives**
Direct - Observation Report	Has the criterion Lab Reports At least 90% of students will attend all labs and successfully complete the reports. been met yet?			

SCI 300				
Assessment Measure	**Criterion**	**Summary**	**Attachments of the Assessments**	**Improvement Narratives**
Direct - Presentation	Has the criterion Oral Presentation All students will receive a minimum score of 90% on their oral presentations. been met yet?			

SCI.3 Students will improve their mathematical skills and learn to develop and interpret accurate models predicting the behavior of complex systems.

PHY 212				
Assessment Measure	**Criterion**	**Summary**	**Attachments of the Assessments**	**Improvement Narratives**
Direct - Quiz/Exam	Has the criterion Essay Questions At least 85% of students will achieve an overall homework score of >85%. been met yet?			

PHY 213				
Assessment Measure	**Criterion**	**Summary**	**Attachments of the Assessments**	**Improvement Narratives**
Direct - Presentation	Has the criterion Lab Assignments A minimum class average of 95% on all lab reports. been met yet?			

SCI.4 Students will acquire an appreciation for the seminal discoveries and technological advances resulting from scientific theories.

PHY 201				
Assessment Measure	**Criterion**	**Summary**	**Attachments of the Assessments**	**Improvement Narratives**
Direct - Quiz/Exam	Has the criterion Essay Questions An average quiz score of >80% for the class. been met yet?			

PHY 213				
Assessment Measure	**Criterion**	**Summary**	**Attachments of the Assessments**	**Improvement Narratives**
Direct - Observation Report	Has the criterion Lab Report An average score of 85% on the student-designed experiment. been met yet?			

Analysis of the Assessment Process

Describe your assessment process; clearly articulate how the program is using course work and or assessment day activities for program assessment. Note any changes that occurred to that process since the previous year. Discuss what activities were successful at assessment and which ones were not as helpful and why. Please include who met to discuss the changes (unless you are a program of one person) and when you met. – Include a discussion on the process for

collection and analysis of program data.

Improvement Narrative List

Assessment Findings for the Assessment Measure level
No improvement narratives have been added.

Program Activities

Student Performance Review
Describe the department assessment day activities if not already described previously. Please articulate the nature of the assessments are conducted, explain the process for assessment that happens on these two days. Include the schedule of assessment day for your program. What does the data and outcomes tell you? What changes will you make as a result of the data? What areas are successful for the program?

Student Performance Review Schedule
Upload the program schedule for students during Performance Reviews.

Senior Showcase
Describe program Senior Showcase activities if not detailed previously in the report? What benefit does the program gain from the activities? What if any assessment of students happens during this event? What changes if any will occur due to what is learned by faculty on Senior Showcase?

Assessment Rubrics
Upload rubrics used for Senior Showcase or Student Performance Reviews for student assessment.

Service Learning
Does the Program include projects/ course content that uses the philosophy of service learning?
Yes
No

Service Learning Component
If so, how is service learning infused in the coursework within your department? Is service or community engagement in the program mission? Describe the Service Learning Activities that your students and department engaged in this past year. How did the activities improve student learning? How did the activities benefit the community?

LEAD Events
Highlight lead events sponsored by program faculty that are connected to program or general education objectives for the past academic year. Include a total number of lead events program faculty sponsored.

Student Accomplishments
Highlight special examples of student successes in the field (academic: mentor-mentee, conference presentations, competitive internship, journal acceptance; extra-curricular: horse show championship, art exhibit). This is for any accomplishments that a student achieved outside of course work or the normal expectations of student success.

Faculty Accomplishments
Highlight special examples of faculty success in the profession/field/content area. This is for any accomplishment of a faculty activity/research/professional nature.

Annual Assessment Rubric

4.000 pts 26.67%

	3.000 Assessment Reflects Best Practices	2.000 Assessment Meets the Expectations of the University	1.000 Assessment Needs Development	0.000 Assessment is Inadequate	N/A
Learning Objectives weight: 1.000	• Detailed, measurable program learning objectives • Objectives are shared with students and faculty	✓ • Measurable program learning objectives. • Learning objectives are available to students.	• Program learning objectives are identified and are generally measurable	• Program learning objectives are not clear or measurable	N/A
Comment:					
Assessment Measures weight: 1.000	• Multiple measures are used to assess a student-learning objectives. • Rubrics or guides are used for the measures. • All measurements are clearly described. • External evaluation of student learning included.	✓ • Assessment measures relate to program learning objectives. • Various measures are used to assess student learning. • Measures chosen provide useful information about student learning.	• Assessment focuses on class content only. • Minimal description of how the assessment relates to the objective. • Minimal assessment measures established.	• Assessment measures not connected to objectives. • Assessment measures are not clear. • No assessment measures are established.	N/A
Comment:	The program manager might want to look at what assessment is already being done with the courses provided with their other programs as each of the courses on the checklist are also part of other programs. I would recommend talking with those faculty and determining if the program objectives forPhysical Science would work for the determined assignment and double assess the assignment using via The assessment plan as listed is based off of the faculty that previously taught those specific courses. With new faculty this might not be the case, where the same faculty teaches all of these				
Assessment Results weight: 1.000	• All objectives are assessed annually, or a rotation schedule is provided. • Data are collected and analyzed to show learning over time. • Standards for performance and gaps in student learning are clearly identified.	• Most objectives assessed annually. • Data collected and analyzed showing an annual snapshot of student learning. • Data are used to highlight gaps in student learning. • Some data from non-course based content.	• Data collected for at least one program objective. • Data collection is incomplete. • Gaps in student learning not identified. • Lacking external data to support course data.	✓ • Learning objectives are not routinely assessed. • Routine data is not collected. • No discussion on gaps in student learning. • No use of external data to support student learning. • Assessment data not yet collected.	N/A
Comment:	There was no data due to faculty changes and general personnel changes the science area. This program is in flux until the faculty changes slow down and settle, allowing a faculty to get a handle on their responsibilities and the oversight of this program.				
Faculty Analysis and Conclusions weight: 1.000	• Data is shared that incorporates multiple faculty from the program. • Discussions on data results incorporate multiple faculty. • Opportunities for adjunct faculty to participate. • Includes input from external sources when possible.	• Multiple program faculty receive assessment results. • Assessment results are discussed • Specific conclusions about student learning are made based on the available assessment results.	• Minimal faculty input about results is sought • Data not used to determine success or not to the objective. • Minimal conclusions made.	✓ • Faculty input is not sought. • Conclusions about student learning are not identified. • N/A Program recently started or too few graduates to suggest any changes.	N/A
Comment:					
Actions to Improve Learning and Assessment weight: 1.000	• All assessment methods, timetable for assessing, and evaluating the effectiveness modifications are included. • Changes to assessment are inclusive of multiple faculty. • Description of changes is detailed and and linked to assessment results.	• More than one change to assessment is proposed, timetable for assessment, and evaluating the change is provided. • Changes to assessment measures is highlighted. • Changes are realistic, with a good probability of improving learning or assessment.	• At least one change to improve learning or assessment is identified. • The proposed action(s) relates to faculty conclusions about areas for improvement. • Adjustments to the assessment are proposed but not clearly connected to data	✓ • Lacking actions to improve student learning. • Actions discussed lack supportive data. • Lacking discussion of the effectiveness of the assessment plan	N/A
Comment:					