MED STEM Annual Assessment 2019-2020

Graduate Annual Assessment 2019-2020

Master of Education STEM

Program Profile
Program Mission

STEM PROGRAM OBJECTIVES/MISSION

Students will understand past and present STEM education reforms in the United States as it relates to: students' learning how to apply science, technology, engineering, and mathematics content; effective integration of science, technology engineering, and mathematics content in the classroom; the impact on students engaging in scientific practices.

Students will understand the role of engineering within the K-12 STEM, science, mathematics, and science classrooms.Students will learn a variety of instructional strategies that teachers use for introducing engineering concepts in science, technology, mathematics, or STEM specific courses.Students will learn how teachers effectively integrate science, mathematics, and technology in engineering design lessons.

Students will be able to describe how integrating technology and coding in STEM classrooms affects student achievement, perceptions, persistence, interests, self-efficacy and/or attitudes.

Students will be able to understand how citizen science activities affects student achievement, perceptions, persistence, interests, self-efficacy and/or attitudes.Students will be able to describe how citizen science projects can be effectively implemented and integrated throughout STEM units.Students will investigate how science, technology, engineering, and mathematics relate to citizen science, and how students engaging in citizen science relates to meeting the NGSS.

WHERE VIA ASSESSMENTS ARE GOING TO OCCUR: WEEK 8 of EDU 564, EDU 565, EDU 566, and EDU 567.

Program Demographics	**Graduating Students**
Total Enrollment 2018-2019	**Total Graduated 2018-2019**
11	4
Total Enrollment 2019-2020	**Total Graduated 2019-2020**
27	

Programm Assessment Data Sheet
Upload the Assessment Data sheet from Institutional Research

Reflection on Demographic Data
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 STEM program has been growing steadily from year to year. This is the first year the STEM education program is being assessed in via, so we are finally getting some assessment data that will provide some evidence for meeting programatic objectives. The growth in the program in my perspective not due to the overall quality of the program, however there have been some signficant changes to the curriculum to address the overall quality of the program; rather, due to the increase in demand for teachers to be knowledgable in STEM education/teaching and learning.

Program Delivery

Cohort
Online (selected)
Hybrid
Cohort and Online

External Accreditation
Does the program hold external accreditation?
Yes (selected)
No

If yes, state the name of the organization.
Along with the name of the organization, please note the date of approval, and the date of review.

Higher Learning Commission.

Marketing Materials
Reflect on the current marketing materials used for the program. Please attach screenshots of the website or any material you are referencing in this section. What changes, if any, should be made to the material? Are there recommendations on how to modify the current material?

We provide information regarding our STEM Education

https://www.williamwoods.edu/academics/online/graduate/master_of_education_in_stem.html

There are several billboards, for example in the admissions office and at Parkade locationl, that specify we have a master's of education in STEM,

Marketing Attachments

Faculty Teaching
Please either fill in the box or upload a document outlining the faculty loads for those who are actively teaching in the program. "Active" includes individuals who have taught within the past year for the program. Include if the faculty are full time or part time as well as how many classes they are teaching.

The faculty that teach in the STEM graduate program are adjuncts.

The following adjuncts run STEM Education coursework and the number of times they have taught their respective courses:

Lori Mathys (EDU 564; 2); Joshua Howard (EDU 564; 1)

Isaac Sooter (EDU 565; 3 times)

Isaac Sooter (EDU 566; 2 times)

Isaac Sooter (EDU 567; 2 times)

Faculty Load Attachment
If you want to attach the load document you can do that here.

Program Objectives

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
MED-STEM.1	Students will understand past and present STEM education reforms in the United States as it relates to: students learning how to apply science, technology, engineering, and mathematics content; effective integration of science, technology engineering, and mathematics content in the classroom; the impact on students engaging in scientific practices.
MED-STEM.2	Students will understand the role of engineering within the K-12 STEM, science, mathematics, and science classrooms. Students will learn a variety of instructional strategies that teachers use for introducing engineering concepts in science, technology, mathematics, or STEM specific courses. Students will learn how teachers effectively integrate science, mathematics, and technology in engineering design lessons.
MED-STEM.3	Students will be able to describe how integrating technology and coding in STEM classrooms affects student achievement, perceptions, persistence, interests, self-efficacy and/or attitudes.
MED-STEM.4	Students will be able to understand how citizen science activities affects student achievement, perceptions, persistence, interests, self-efficacy and/or attitudes. Students will be able to describe how citizen science projects can be effectively implemented and integrated throughout STEM units. Students will investigate how science, technology, engineering, and mathematics relate to citizen science, and how students engaging in citizen science relates to meeting the NGSS.

Alignment with Institutional Objectives
Please discuss the program alignment to the University Objectives. We do not need an artifact for each objective, but a discussion on how the program uses the Institutional Objectives as an anchor for their program curriculum.

WWU 2016.1: Major Field Competence: Students will demonstrate excellence in an academic or professional discipline, and engage in the process of academic discovery.

Curriculum Map

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

STEM

	EDU 564	EDU 565	EDU 566	EDU 567
MED-STEM.1 Students will understand past and present STEM education reforms in the United States as it relates to: students learning how to apply science, technology, engineering, and mathematics content; effective integration of science, technology engineering, and mathematics content in the classroom; the impact on students engaging in scientific practices.	A, M			
MED-STEM.2 Students will understand the role of engineering within the K-12 STEM, science, mathematics, and science classrooms. Students will learn a variety of instructional strategies that teachers use for introducing engineering concepts in science, technology, mathematics, or STEM specific courses. Students will learn how teachers effectively integrate science, mathematics, and technology in engineering design lessons.		A, M		
MED-STEM.3 Students will be able to describe how integrating technology and coding in STEM classrooms affects student achievement, perceptions, persistence, interests, self-efficacy and/or attitudes.			A, M	
MED-STEM.4 Students will be able to understand how citizen science activities affects student achievement, perceptions, persistence, interests, self-efficacy and/or attitudes. Students will be able to describe how citizen science projects can be effectively implemented and integrated throughout STEM units. Students will investigate how science, technology, engineering, and mathematics relate to citizen science, and how students engaging in citizen science relates to meeting the NGSS.				A, M

Changes to Curriculum
Are there any changes made to the curriculum map for this academic year? If so, please describe the program changes made along with the rationale for why and the impact the changes should' have on student learning?

Yes, new program objectives; and new EDU 564, EDU 565, EDU 566, and EDU 567 syllabi have been revised.

Assessment Findings

Assessment Findings for the Assessment Measure level for STEM

MED-STEM.1 Students will understand past and present STEM education reforms in the United States as it relates to: students learning how to apply science, technology, engineering, and mathematics content; effective integration of science, technology engineering, and mathematics content in the classroom; the impact on students engaging in scientific practices.

EDU 564				
Assessment Measure	**Criterion**	**Summary**	**Attachments of the Assessments**	**Improvement Narratives**
	Has the criterion 95% of students will score 180/200 or higher on final project. been met yet? Met	100% Exemplary File Attached Here	StEM_2019_2020.pdf	

MED-STEM.2 Students will understand the role of engineering within the K-12 STEM, science, mathematics, and science classrooms. Students will learn a variety of instructional strategies that teachers use for introducing engineering concepts in science, technology, mathematics, or STEM specific courses. Students will learn how teachers effectively integrate science, mathematics, and technology in engineering design lessons.

EDU 565				
Assessment Measure	**Criterion**	**Summary**	**Attachments of the Assessments**	**Improvement Narratives**
	Has the criterion 95% of students will score 180/200 or higher on final project. been met yet? Not met	Not assessed since program started assessment		

<table>
<tr><td colspan="5">MED-STEM.3 Students will be able to describe how integrating technology and coding in STEM classrooms affects student achievement, perceptions, persistence, interests, self-efficacy and/or attitudes.</td></tr>
</table>

EDU 566				
Assessment Measure	**Criterion**	**Summary**	**Attachments of the Assessments**	**Improvement Narratives**
	Has the criterion 95% of students will score 180/200 or higher on final project. been met yet? Met	100% Exemplary		

<table>
<tr><td colspan="5">MED-STEM.4 Students will be able to understand how citizen science activities affects student achievement, perceptions, persistence, interests, self-efficacy and/or attitudes. Students will be able to describe how citizen science projects can be effectively implemented and integrated throughout STEM units. Students will investigate how science, technology, engineering, and mathematics relate to citizen science, and how students engaging in citizen science relates to meeting the NGSS.</td></tr>
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EDU 567				
Assessment Measure	**Criterion**	**Summary**	**Attachments of the Assessments**	**Improvement Narratives**
	Has the criterion 95% of students will score 180/200 or higher on final project. been met yet? Not met	Not assessed since assessment just started this year.		

Improvement Narrative List

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

Assessment List

Analysis of the Assessment Process
Describe your assessment process; clearly articulate how the program is using coursework and or assessment day activities for program wide 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.

Occurs week 8 using a single rubric across four courses. Assignment is a 20 page research paper focusing on STEM teaching and learning as it related to STEM history, Engineering Design, Citizen Science, and Coding.

Program Activities

Student Accomplishments
Highlight special examples of student successes in the field (research, conference presentation, award in the profession). This is for any accomplishment that a student achieved outside of coursework or the normal expectations of student success.

Students are employed science, math, and engineering teachers. Some students are also elementary teachers.

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

Jim Concannon

PHD Science Education

PHD Minor College Science Teaching

MED Curriculum and Instruction

BS Biochemistry

30+ Peer Reviewed Publications (5 tier 1 publications); 3 published books; 30+ Proceedings.

Alumni Accomplishments
Highlight special examples of any successes of any alumni (acceptance to or graduation from a graduate/professional program, new job in the field) including your most recent graduates

Professional Development Opportunities
- Highlight professional development opportunities over the course of the academic year that were beneficial to program faculty and or instrumental to student learning. This could be local or external professional development.

The 564, 565, 566, and 567 courses were revised in 2019, and assessment of the program began Jan 1, 2020

Professional Development
Upload any documentation supporting the professional development offered.

Assessment Rubric

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Clear	3.000 **Exceeds**	2.000 **Meets**	1.000 **Falls Below Expectations**	**N/A**
Mission Statement Clearly Articulated weight: 1.000	The mission statement for the program is insightful and forward thinking. It aligns with the University Mission and learning objectives showing a clear alignment between the University and the program.	✓ The mission statement for the program clearly articulated and aligned with the University mission.	The mission statement is minimal at best.	✓ N/A
Comment:				
Reflection on Retention weight: 1.000	The program provides a detailed description on the retention numbers. The program provides new ideas on how to improve retention of their program students or articulates what they are currently doing to keep students in their program.	✓ The program provides a basic reflection on the retention data provided.	The program does not reflect on retention data in a detailed way.	✓ N/A
Comment:				
Defines External Accreditation Standards weight: 1.000	The program provides a detailed explanation of the accreditation organizations within the field along with all the timeline and supplemental information required for accreditation.	The program provides a basic explanation of the accreditation organizations in the field.	The program fails to provide any accreditation information.	✓ N/A
Comment:				
General Education alignment clearly explained weight: 1.000	The program provides a detailed explanation of the General Education criterial and how the basic skills learned are expanded upon in the program. Details include but are not limited to: specific courses, or activities that stretch the knowledge of the specific areas.	The program provides a basic explanation of the General Education curriculum and how the skills learned are expanded in program courses.	✓ The program provides a minimal explanation of the General Education curriculum and how the skills learned are expanded in program courses.	✓ N/A
Comment:				
Curriculum Map alignment weight: 1.000	The curriculum map is detailed and complete.	The curriculum map is complete	✓ The curriculum map is not complete	✓ N/A
Comment:				
Assessment of Objectives weight: 1.000	Assessment of objectives are spread out across the curriculum with a variety of assessment measures and each program objective is assessed a minimum of twice a year.	Each objective is assessed a minimum of 2 times a year or an assessment rotation is explained so that all objectives are assessed. The assessments are not concentrated in one class.	✓ The assessment map is not complete or much of the assessment happens in only one course. Not all objectives are assessed annually, nor is a plan provided on assessment.	✓ N/A
Comment:				
Data Driven Decision-making is explained weight: 1.000	Curricular and assessment changes are articulated and validated through data based decisions. Faculty discuss the data that lead to curricular decisions being made.	Curricular and assessment decisions are made based on data provided in assessment, but detailed alignment is not provided as justification for the change.	✓ Changes are proposed and brought forth with little explanation on the data included in the decision, if data was included in the decision.	✓ N/A

Documentation provided on assessment findings weight: 1.000	✓ The program uploads all rubric and support information to support the claims in the assessment findings along with detailed instructions on the assessment process and data analysis.	✓ The program uploads all rubric and support information to support the claims in assessment findings.	✓ The program did not upload the data to support assessment claims in the assessment findings.	✓ N/A
Comment:				
Analysis of Assessment is complete weight: 1.000	✓ The program completed assessment findings for each component identified, and provided a comprehensive summary of each assessment measure identified in the report.	✓ The program completed the assessment findings for each component and provided a summary for each assessment measure.	✓ The program did not provide a completed assessment findings for each component, nor did they complete the summary for each measure.	✓ N/A
Comment:				
Improvement narratives are selected with intentionality weight: 1.000	✓ The program identified Improvement Narratives that appear to move the program forward and see the bigger picture than only the specific program curriculum options	✓ The program used the provided Improvement Narratives and selected options that made sense to the objectives and issues within the assessment.	✓ The program did not use any improvement narratives, or the ones chosen are not aligned with assessment results.	✓ N/A
Comment:				
Student Performance Review weight: 1.000	✓ The program described and provided a detailed account of Student performance Review activities. Data evidence provided and detailed.	✓ The program provided the schedule and a brief description of Student Performance Review with data of the results.	✓ The program did not provide complete explanation on Student Performance Review nor did they provide data results.	✓ N/A
Comment:				
Senior Showcase weight: 1.000	✓ The program had all senior students participate in Senior Showcase and provided a detailed explanation of their expectation and the presentations presented.	✓ The program described the Senior showcase activities and provided some evidence of what was presented.	✓ Little to no content of Senior showcase was provided.	✓ N/A
Comment:				
Co Curricular activities weight: 1.000	✓ The program detailed the activities of LEAD and other co-curricular programing that was provided throughout the year. They provided numerous events for students.	✓ The program provided a listing of LEAD events and activities provided.	✓ The program provided little to no description of the Co-curricular activities provided throughout the year.	✓ N/A
Comment:				
Faculty, alumni, and Student accomplishments weight: 1.000	✓ The program provided detail updates on successes on Students, Alumni and Faculty with added information explaining the kinds of success that were experienced.	✓ The program provided a listing of information on Students, Alumni, and faculty accomplishments.	✓ The program provided little to no data on students, alumni, faculty accomplishments.	✓ N/A