**Academic Program Assessment Report for AY 2018-2019**

**Program:**___BS/BA Mathematics_____

**(Due: May 1, 2019)**

**Date report completed:** __May 24, 2019___

**Completed by:**___Dr. Paul Chacon_____

**Assessment contributors (other faculty involved):** _____

Please describe the 2018-2019 assessment activities and follow-up for your program below. Please complete this form for each undergraduate major, minor, certificate, and graduate program (e.g., B.A., B.S., M.S.) in your department. Please copy any addenda (e.g., rubrics) and paste them in this document, save and submit it to both the Dean of your college/school and to the Assistant Provost as an email attachment before June 1, 2018. You'll also find this form on the assessment website at https://www.csupueblo.edu/assessment-and-student-learning/resources.html. Thank you.

**Brief statement of Program mission and goals:**

**I. Assessment of Student Learning Outcomes (SLOs) in this cycle.** Including processes, results, and recommendations for improved student learning. Use Column H to describe improvements planned for 2018-2019 based on the assessment process.

1.Students will have facility in the core mathematical content areas: calculus, algebra, and other additional topics.

Criterion: Overall and in the content and cognitive breakdown areas of the MFT, ninety percent of CSU – Pueblo mathematics majors will score at or above the 50th percentile on the MFAT standardized exam.

3.Students will create, analyze and use mathematical abstraction. They will understand and write formal mathematical arguments

4.Students will produce and deliver effective written presentations of mathematical material and ideas.

Criterion for 3. and 4: By the conclusion of the capstone courses most students are expected to be proficient in mathematical argumentation and proof at the undergraduate level.

| A. Which of the program SLOs were assessed during this cycle? **Please include the outcome(s) verbatim from the assessment plan.** | B. When was this SLO last reported on prior to this cycle? (semester and year) | C. What method was used for assessing the SLO? **Please include a copy of any rubrics used in the assessment process.** | D. Who was assessed? Please fully describe the student group(s) and the number of students or artifacts involved (N). | E. What is the expected proficiency level and how many or what proportion of students should be at that level? | F. What were the results of the assessment? (Include the proportion of students meeting proficiency.) | G. What were the department's conclusions about student performance? |
|---|---|---|---|---|---|---|
| 1. | May 2018 | See above | All graduates | See above | 8 of 12 meet | Not at 90% |
| 3. | May 2018 | See above | Students in Math 307 Math 427 | See above | 4 of 9 meet 5 of 7 meet | Expected larger percent proficient |
| 4. | May 2018 | See above | Students in Math 307 Math 427 | See above | 4 of 9 meet 5 of 7 meet | Expected larger percent proficient |

H. What changes/improvements to the program are planned based on this assessment?

Small sample sizes make year to year comparison invalid, and individual year results subject to random variation. We are pleased ot see most of our graduating students becoming proficient in reading and writng proofs. Marginal students do in fact graduate from the program. We work with them over serveral years, but some do not reach our assessment targets. These are the ones that impact out results. We will have ongoing discussion as to what is the best path to take with these students. One option being dsicusssed is to require an intro to proof class as part of the major.

Comments on part I:

**II. Closing the Loop. Describe at least one data-informed change to your curriculum during the 2018-2019 cycle.** These are those that were based on, or implemented to address, the results of assessment from previous cycles.

## 3.Students will create, analyze and use mathematical abstraction. They will understand and write formal mathematical arguments

| A. What SLO(s) or other issues did you address in this cycle? **Please include the outcome(s) verbatim from the assessment plan.** | B. When was this SLO last assessed to generate the data which informed the change? Please indicate the semester and year. | C. What were the recommendations for change from the previous assessment column H and/or feedback? | D. How were the recommendations for change acted upon? | E. What were the results of the changes? If the changes were not effective, what are the next steps or the new recommendations? |
|---|---|---|---|---|
| 3. | Annually | Make Math 307 a more proof oriented class. | Curriculum and prrequisite changed | Final exams indicate more students proficient at proof writing. |
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Small sample sizes make year to year comparison invalid, and individual year results subject to random variation, however the results seem promising.

Comments on part II:

## Miscellany

A review of our exit interviews showed no concerns that needed to be addressed. One student commented that some classes tend to differ based on instructor, but did not indicate which classes were subect to the commnets.

**Responses to Weaknesses/Challenges:**

- Some departmental division is present as a result of differences among folks teaching for the math major, developmental math, as well as the physics program which all reside in the same department.

**Results**
**Now that we have an assistant chair of physics, it has been easier to provide leadership in these areas and reduce apparent divisions.**

- With no new TT hires during the review period and in fact, loss of faculty FTE in both mathematics and physics, an exciting scholarly culture within the program is no longer as evident.

**Results**
**Loss of faculty FTE continues with loss of Igor Melnykov. In addition it appears that release time for scholarship is in jeopardy. The scholarly culture is still at risk.**

Action Items not requiring monetary resources:

1) **Action:** Create a department strategic plan
   **Responsible Parties:** Math Program Chair, CSM Dean
   The department will develop a strategic plan that meshes with the CSU-Pueblo Vision 2028. This process is imperative for determining which of the following action items can or should be pursued, and which items will receive additional resources. However Vision 2028 seems to provide no guidance.
   **Timeline:** completed by August 2019

2) **Action:** Analyze the curriculum
   **Responsible Parties:** Math faculty, Math Chair
   Per the suggestions of the external reviewer, the math department will take a look at its developmental offerings and determine if there are improvements to be made

**Results**
**We have completed the process of restructuring the entry level curriculum.**

Other Action Items that may require resources:

1) **Action:** Resolve IT and other infrastructure needs
   **Responsible Parties:** Department faculty, CSM Dean

**Results**
**We have identified a need for resources supporting on-line math and physics classes. Funding has been obtained and these have been purchased.**

2) **Action:** Evaluate and possibly restructure the program
   **Responsible Parties:** CSM Dean, CSU-Pueblo administrators, Department Chair

**Results**

**We have decided that physics has a higher priority than remedial education, and we now have an assistant chair of physics. This may be appropriate, since without leadership the physics major could easily disappear.**