Subject Area Committee Name: MTH

Contact Person:

Name	*e-mail*
Thomas Songer	thomas.songer@pcc.edu

Only one assessment report is required this year. Document your plan for this year's assessment report(s) in the first sections of this form. This plan can be consistent with the Multi-Year Plan you have submitted to the LAC, though, this year, because PCC is engaging in a year-long exploration of our core outcomes and general education program, SACs are encouraged to explore/assess other potential outcomes. Complete each section of this form. In some cases, all of the information needed to complete the section may not be available at the time the report is being written. In those cases, include the missing information when submitting the completed report at the end of the year.

- Refer to the help document for guidance in filling-out this report. If this document does not address your question/concern, contact Chris Brooks to arrange for coaching assistance.
- Please attach all rubrics/assignments/etc. to your report submissions.
- **Subject Line of Email:** Assessment Report Form (or ARF) for <your SAC name> (Example: ARF for MTH)
- **File name:** SACInitials_ARF_2016 (Example: MTH_ARF_2016)
- SACs are encouraged to share this report with their LAC coach for feedback before submitting.
- Make all submissions to learningassessment@pcc.edu.

Due Dates:

- **Planning Sections of LAC Assessment or Reassessment Reports: November 16th, 2015**
- **Completed LAC Assessment or Reassessment Reports: June 17th, 2016**

Please Verify This Before Beginning this Report:

☒ This project is not the second stage of the assess/re-assess process (if this is a follow-up, re-assessment project, use the LAC Re-assessment Report Form LDC. Available at: http://www.pcc.edu/resources/academic/learning-assessment/LDC_Assessment_Templates.html

1. Outcome

1A. PCC Core Outcome or Exploratory Outcome: Quantitative Literacy

1B. Briefly describe the outcome your SAC will be assessing this year.

We will explore student learning of prerequisite math items considered to be critically important for entry and success in PCC Statistics and various CTE programs.

1C. Briefly describe how this outcome is/might be important/useful to your students.

This outcome encompasses the essential quantitative skills and mathematical competencies which students need to successfully enter and navigate the gateway courses for their chosen fields of study.

2. Project Description

2A. Assessment Context

Check and complete all the applicable items:

☒ **Course based assessment.**

Course names and number(s): Basic Math (MTH 20), Math Literacy I (MTH 58), Introductory Algebra - 1st Term (MTH 60). We may also include Math Literacy II (MTH 98), and Introductory Algebra - 2nd Term (MTH 65) within our assessment scope.

Expected number of sections offered in the term when the assessment project will be conducted: TBA Winter

Number of these sections taught by full-time instructors: TBA Winter

Number of these sections taught by part-time instructors: TBA Winter

Number of distance learning/hybrid sections: TBA Winter
Type of assessment (e.g., essay, exam, speech, project, etc.): Exam

Are there course outcomes that align with this aspect of the core outcome being investigated? ☒ Yes ☐ No

If yes, include the course outcome(s) from the relevant CCOG(s): The relevant MTH CCOG's contain numerous Course Content outcomes classified as Themes, Concepts, Issues and Skills. Our subcommittee is currently narrowing down those outcomes in conjunction with ongoing development of our assessment tool.

☐ **Common/embedded assignment in all relevant course sections.** An embedded assignment is one that is already included as an element in the course as usually taught. Please attach the activity in an appendix. If the activity cannot be shared, indicate the type of assignment (e.g., essay, exam, speech, project, etc.):

☐ **Common – but not embedded - assignment used in all relevant course sections.** Please attach the activity in an appendix. If the activity cannot be shared, indicate the type of assignment (e.g., essay, exam, speech, project, etc.):

☐ **Practicum/Clinical work.** Please attach the activity/checklist/etc. in an appendix. If this cannot be shared, indicate the type of assessment (e.g., supervisor checklist, interview, essay, exam, speech, project, etc.):

☐ **External certification exam.** Please attach sample questions for the relevant portions of the exam in an appendix (provided that publically revealing this information will not compromise test security). Also, briefly describe how the results of this exam are broken down in a way that leads to nuanced information about the aspect of the core outcome that is being investigated.

☐ **SAC-created, non-course assessment.** Please attach the assessment in an appendix. If the assessment cannot be shared, indicate the type of assignment (e.g., essay, exam, speech, project, etc.):

☐ **Portfolio.** Please attach sample instructions/activities/etc. for the relevant portions of the portfolio submission in an appendix. Briefly describe how the results of this assessment are broken down in a way that leads to nuanced information about the aspect of the core outcome that is being investigated:

☐ **Survey**

☐ **Interview**

☐ **Other.** Please attach the activity/assessment in an appendix. If the activity cannot be shared, please briefly describe:

In the event publically sharing your assessment documents will compromise future assessments or uses of the assignment, do not attach the actual assignment/document. Instead, please give as much detail about the activity as possible in an appendix.

2B. How will you score/measure/quantify student performance?

☒ **Rubric** (used when student performance is on a continuum - if available, attach as an appendix – if in development - attach to the completed report that is submitted in June)
☒ **Checklist** (used when presence/absence rather than quality is being evaluated - if available, attach as an appendix – if in development - attach to the completed report that is submitted in June)
☐ **Trend Analysis** (often used to understand the ways in which students are, and are not, meeting expectations; trend analysis can complement rubrics and checklist)
☐ **Objective Scoring** (e.g., Scantron scored examinations)
☐ **Other** – briefly describe:

2C. Type of assessment (select one per column)

☒ **Quantitative**	☒ **Direct Assessment**
☐ **Qualitative**	☐ **Indirect Assessment**

If you selected 'Indirect Assessment', please share your rationale:

Qualitative Measures: projects that analyze in-depth, non-numerical data via observer impression rather than via quantitative analysis. Generally, qualitative measures are used in exploratory, pilot projects rather than in true assessments of student attainment. Indirect assessments (e.g., surveys, focus groups, etc.) do not use measures of direct student work output. These types of assessments are also not able to truly document student attainment.

2D. Check any of the following that were used by your SAC to create or select the assessment/scoring criteria/instruments used in this project:

☒ Committee or subcommittee of the SAC collaborated in its creation
☐ Standardized assessment
☒ Collaboration with external stakeholders (e.g., advisory board, transfer institution/program)
☐ Theoretical Model (e.g., Bloom's Taxonomy)
☐ Aligned the assessment with standards from a professional body (for example, The American Psychological Association Undergraduate Guidelines, etc.)
☐ Aligned the benchmark with the Associate's Degree level expectations of the Degree Qualifications Profile
☐ Aligned the benchmark to within-discipline post-requisite course(s)
☐ Aligned the benchmark to out-of-discipline post-requisite course(s)
☐ Other (briefly explain:)

2E. In which quarter will student artifacts (examples of student work) be collected? If student artifacts will be collected in more than one term, check all that apply.

☐ **Fall** ☒ **Winter** ☐ **Spring** ☐ **Other** (e.g., if work is collected between terms)

2F. When during the term will it be collected? If student artifacts will be collected more than once in a term, check all that apply.

☐ **Early** ☒ **Mid-term** ☐ **Late** ☐ **n/a**

2G. What student group do you want to generalize the results of your assessment to? For example, if you are assessing performance in a course, the student group you want to generalize to is 'all students taking this course.'

All students taking the selected mathematics courses.

2H. There is no single, recommended assessment strategy. Each SAC is tasked with choosing appropriate methods for their purposes. Which best describes the purpose of this project?

☒ **To measure established outcomes and/or drive programmatic change (proceed to section H below)**
☐ **To participate in the Multi-State Collaborative for Learning Outcomes Assessment**
☐ **Preliminary/Exploratory investigation**

If you selected 'Preliminary/Exploratory' (most often a 'pilot study'), briefly describe why you opted to do a pilot study, along with your rationale for selecting your sample of interest (skip section H below). For example: "The SAC intends to add a Cultural Awareness outcome to this course in the upcoming year. It is not currently taught in most sections of this course. 2 full-time faculty and 1 part-time faculty member will field-test 3 different activities/assessments intended to measure student attainment of this proposed course outcome. The 3 will be compared to see which work best."

2I. Which will you measure?

☐ **the population** (all relevant students – e.g., all students enrolled in all currently offered sections of the course)
☒ **a sample** (a subset of students)

If you are using a sample, select all of the following that describe your sample/sampling strategy (refer to the Help Guide for assistance):

☐ **Random Sample** (student work selected completely randomly from all relevant students)

☐ **Systematic Sample** (student work selected through an arbitrary pattern, e.g., 'start at student 7 on the roster and then select every 5th student following'; repeating this in all relevant course sections)
☐ **Stratified Sample** (more complex, consult with an LAC coach if you need assistance)
☐ **Cluster Sample** (students are selected randomly from meaningful, naturally occurring groupings (e.g., SES, placement exam scores, etc.)
☒ **Voluntary Response Sample** (students submit their work/responses through voluntary submission, e.g., via a survey)
☒ **Opportunity/Convenience Sample** (only a few instructors are participating in a project taught via multiple sections, so, only those instructors' students are included)

The last three options in bolded red have a high risk of introducing bias. If your SAC is using one or more of these sample/sampling strategies, please share your rationale: The prohibitively large number of course sections for our contemplated MTH courses restricts us to a convenience sample involving only some of the associated target course Instructors and students. Additionally, students are not expected to be compelled or required to complete the assessment exam, and thus will only enter our assessment sample via voluntary participation and response. As such, our results will need to be considered an exploratory case study, rather than providing findings which may be generalized to the full student populations of interest.

***2J. Briefly describe the procedure you will use to select your sample (including a description of the procedures used to ensure student and instructor anonymity**. For example:*

"We chose to use a random sample. We asked our administrative assistant to assist us in this process and she was willing. All instructors teaching course XXX will turn-in all student work to her by the 9th week of Winter Quarter. She will check that instructor and student identifying information has been removed. Our SAC decided we wanted to see our students' over-all performance with the rubric criteria. Our administrative assistant will code the work for each section so that the scored work can be returned to the instructors (but only she will know which sections belong to which instructor). Once all this is done, I will number the submitted work (e.g., 1-300) and use a random number generator to select 56 samples (which is the sample size given by the Raosoft sample size calculator for 300 pieces of student work). After the work is scored, the administrative assistant will return the student work to individual faculty members. After this, we will set up a face-to-face meeting for all of the SAC to discuss the aggregated results."

As described above, we intend to be using a convenience sample with voluntary response. Our current plan is to select sufficient target section Instructors (either by random or voluntary means) to ensure our minimum sample size, and then provide each Instructor with support, instructions, and adequate copies of the assessment to give their students at a convenient time identified

within their course timeline. To protect student and Instructor anonymity: The exams will restrict students from supplying their names, and the Instructors will gather their completed assessment exams into individual coded envelopes not showing the Instructor's name. When aggregate results are later compiled, we intend for the participating Instructors (if possible) to be able to access their individual class results if they wish by using a pre-defined method involving these anonymous envelope codes (rather than sorting by Instructor name).

2K. Follow this link to determine how many artifacts (samples of student work) you should include in your assessment: http://www.raosoft.com/samplesize.html (see screen shot below). ***Estimate the size of the group you will be measuring (either your sample or your population size [when you are measuring all relevant students]). Often, this can be based on recent enrollment information (last year, this term, etc.):***

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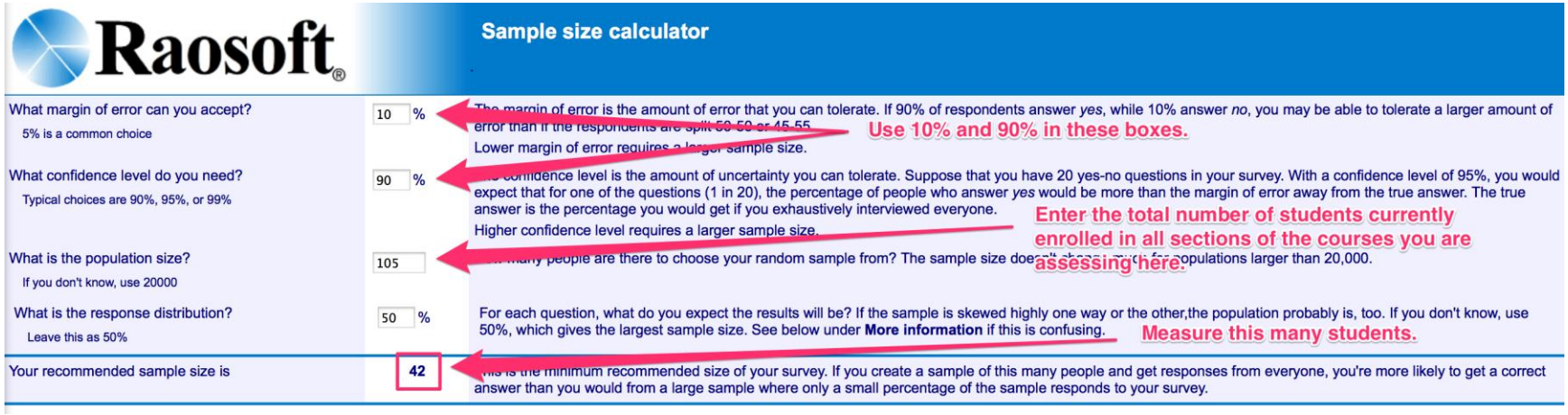

3. Project Mechanics

3A. Does your project utilize a rubric for scoring? ☒ **Yes** ☐ **No**

If 'No', proceed to section B. If 'Yes', complete the following.

Multiple raters should always be used in SAC assessment projects that utilize rubrics or checklists. SACs have several options for ensuring that ratings are similar across each rater. The most time consuming option is for all raters to collectively rate and discuss each artifact until they reach 100% agreement on each score (this is called **consensus**). In most cases, SACs should consider a more efficient strategy that divides the work (a norming or calibrating session). During a norming session, all raters participate in a training where the raters individually score pre-selected student work and then discuss their reasons for giving the scores they chose. Disagreements are resolved and the process is repeated. When the participants feel they are all rating student work consistently, they then independently score additional examples of student work in the norming session (often 4-6 artifacts). The ratings for these additional artifacts are checked to see what percentage of the scores are in agreement (the standard is 70% agreement or higher). When this standard is reached in the norming session, the raters can then divide-up the student work and rate it independently. If your SAC is unfamiliar with norming procedures, contact Chris Brooks to arrange for coaching help for your SAC's norming session.

Which method of ensuring consistent scoring (inter-rater reliability) will your SAC use for this project?

☒ **Agreement** – the percentage of raters giving each artifact the same/similar score in a norming session

If you are using agreement, describe your plan for plan for conducting the "norming" or "calibrating" session:

We intend to hold pre-norming sessions in consult with any/all interested members of the MTH SAC (likely during a breakout session within an in-service SAC meeting), to ensure we proceed with an overall common (SAC-level) understanding of scoring expectations. Following this step, our subcommittee will hold our own norming sessions until we are satisfied we have achieved a sufficient inter-rater reliability condition. Artifacts used for these sessions may include items from initial testing or trial-runs of our assessment tool with select participating Instructors.

☐ **Consensus** - all raters score all artifacts and reach agreement on each score

Though rarely used at PCC, some SACs might occasionally use the consistency measure for determining the similarity of their ratings. Consistency is generally only recommended when measuring student improvement – not for showing outcome attainment (which explains its rarity). See the Help Guide for more information. Check here if you will be using consistency calculations in this assessment.

☐ **Consistency*** – raters' scores are correlated: this captures relative standing of the performance ratings - but not precise agreement – and then briefly describe your plan:

3B. Have performance benchmarks been specified?

The fundamental measure in educational assessment is the number of students who complete the work at the expected/required level. We are calling this SAC-determined performance expectation the 'benchmark.'

☐ **Yes** (determined by faculty consensus – all instructors who currently teach the course)
☐ Yes (determined by only some of the instructors who currently teach the course)
☐ **Yes** (determined by alignment with an external standard: e.g., standards published by the discipline's professional organization)
☒ **Yes** (determined by post-requisite course expectations within PCC)
☐ **Yes** (determined by post-requisite course expectations for transfer institution)
☐ **Yes** (other). Describe briefly:
☐ **No**

If yes, briefly describe your performance benchmarks, being as specific as possible (if needed, attach as an appendix):

Our performance benchmarks align with established learning outcomes for target courses as defined within each MTH Course Content and Outcome Guide (CCOG). Specific learning outcomes reflected within our assessment further represent select prerequisite math items considered critical for success in subsequent (post-requisite) Statistics and CTE program coursework. We thus expect all students completing the MTH courses targeted for our assessment should be able to perform these stated outcomes.

If no, what is the purpose of this assessment (for example, this assessment will provide information that will lead to developing benchmarks in the future; or, this assessment will lead to areas for more detailed study; etc.)?

3C. The purpose of this assessment is to have SAC-wide evaluation of student work, not to evaluate a particular instructor or student. Before evaluation, remove identifying student information (and, when possible remove instructor identifying information). If the SAC wishes to return instructor-specific results, see the Help Guide for suggestions on how to code and collate. Please share your process for ensuring that all identifying information has been removed.

This has already been described earlier in this report -- please see item 2J above which describes how all identifying student and Instructor names will be removed from the artifacts at individual and aggregate levels. If further concern remains from LAC, a third-party may become necessary to coordinate the sorting codes intended to protect Instructor anonymity throughout the process.

3D. Will you be coding your data/artifacts in order to compare student sub-groups? ☒ **Yes** ☐ **No**

If yes, select one of the boxes below:

☐ **student's total earned hours** ☐ **previous coursework completed** ☐ **ethnicity** ☒ **other**

Briefly describe your coding plan and rationale (and if you selected 'other', identify the sub-groups you will be coding for:

Due to the possibility of selecting several different MTH courses to participate in our assessment activity, we may code the artifacts at the course-level in order to preserve this aspect for later contrast and results comparison.

*3E. Ideally, student work is **evaluated** by both full-time and adjunct faculty, even if students being assessed are taught by only full-time and/or adjunct faculty. Further, more than one rater is needed to ensure inter-rater reliability. If you feel only one rater is feasible for your SAC, please consult with an LAC coach prior to submitting your plan/conducting your assessment.*

Other groups may be appropriate depending on the assessment. Check all that apply.

☒ PCC Adjunct Faculty within the program/discipline
☒ PCC FT Faculty within the program/discipline
☐ PCC Faculty outside the program/discipline
☐ Program Advisory Board Members
☐ Non-PCC Faculty
☐ External Supervisors
☐ Other:

End of Planning Section – Complete the remainder of this report after your assessment project is complete.