HAWAI‘I COMMUNITY COLLEGE
PROGRAM ANNUAL REVIEW REPORT

Remedial/Developmental Mathematics

Date _____February 16, 2017_____

Review Period
July 1, 2015 to June 30, 2016

Initiator: Marilyn Bader
Writer(s):

Program/Unit Review at Hawai‘i Community College is a shared governance responsibility related to strategic planning and quality assurance. Annual and 3-year Comprehensive Reviews are important planning tools for the College's budget process. This ongoing systematic assessment process supports achievement of Program/Unit and Institutional Outcomes. Evaluated through a college-wide procedure, all completed Program/Unit Reviews are available to the College and community at large to enhance communication and public accountability. Please see http://hawaii.hawaii.edu/files/program-unit-review/

Please remember that this review should be written in a professional manner. Mahalo.

PROGRAM DESCRIPTION

Describe the Program: Remedial/ developmental mathematics courses offered at Hawaii Community College are a part of the Liberal Arts Program, which is designed for students who are preparing to transfer to a four-year college or university. There is no detailed program description of remedial/ developmental mathematics courses, since these courses do not constitute a "program". They are intended to assist students in their goals of succeeding in college or transfer level mathematics.	
Provide the short description as listed in the current catalog.	The short description of the Associate of Arts Degree, in which the math remedial/developmental courses are embedded, describes the AA Degree as "A general and pre-professional education degree consisting of at least 60 Baccalaureate-level semester credits at 100 and 200 levels provides students with skills and competencies essential for successful completion of a Baccalaureate degree."
Provide and discuss the program's mission (or goals and objectives if no program mission statement is available).	The Liberal Arts Program has Program Learning Outcomes for the AA Degree. Goals of the program state that students should be able to: • Communicate Effectively • Think Critically • Reason Quantitatively • Apply Areas of Knowledge • Engage as Global Citizens

Comprehensive Review information: Required for ARPD Web Submission

Provide the year and URL for the location of this program's last Comprehensive Review on the HawCC Program/Unit Review website: http://hawaii.hawaii.edu/files/program-unit-review/	
Year	Not required for Remedial/Developmental Math Program
URL	Not required for Remedial/Developmental Math Program
Provide a short summary regarding the last Comprehensive Review for this program. Discuss any significant changes to the program since the last Comprehensive Review that are not discussed elsewhere in this review.	Not required for Remedial/Developmental Math Program

QUANTITATIVE INDICATORS

ARPD Data

Please attach a copy of the program's ARPD data tables and submit with the Program Review document.

a) **If you will be submitting the Program Review document in hard copy, print and staple a copy of the data tables to the submission; the icon to print the data tables is on the upper right side, just above the data tables.**
   OR
b) **If you will be submitting the Program Review document in digital form, attach a PDF copy of the data tables along with the digital submission; the icon to download the data tables as a PDF is in the upper right side, just above the data tables.**

Program data can be found on the ARPD website: http://www.hawaii.edu/offices/cc/arpd/

ANALYSIS OF THE PROGRAM's DATA

Analyze the program's ARPD data for the review period. Describe, discuss, and provide context for the data, including the program's health scores in the following categories:	
Demand	**Demand Indicator is Unhealthy.** While Demand has decreased for remedial/developmental math courses, the demand **should** decrease if the goal is to increase the number of students enrolled in college or transfer-level math classes. Therefore, this indicator should be considered to be "Healthy" not "Unhealthy". All Demand Indicators progressively decreased over the review period. Percentage decreases were more pronounced from 13-14 to 14-15 with a 18% decrease compared to the 14-15 to 15-16 decrease of 10%. Semester hours taught decreased by 19%, followed by a 10% decrease. Student Semester Hours (SSH) taught decreased 21%, followed by a 12% decrease. The number of full-time students enrolled in fall decreased by 28%, followed by a 13% decrease, while the number of students enrolled in spring decreased by 20% followed by a 25% decrease. The AtD cohort with placement scores, decreased by 1% from 2012 to 2013, while the AtD cohort who placed into remedial/developmental math courses decreased by 4%. The percent of the AtD cohort enrolling in remedial/developmental math courses increased by 4% from 2012 to 2013. No data was provided of AtD students in 2014.

Efficiency	**Efficiency Indicator is Healthy.** Average class size increased from 20.4 to 21.6 and then decreased slightly to 21.0. The fill rate increased from 82.1% to 87% and then decreased to 85%. The BOR appointed faculty decreased from 4.6 to 3.9 to 3.2 while the number of Non-BOR appointed faculty fluctuated from 5 to 6 and then back to 5. The percent of classes taught by full time math faculty increased from 50% to 55% to 58%, while the percent of classes taught by math lecturers decreased from 50% to 45% to 42%. Program budget allocation and cost per SSH were not provided for 2014-2015 and 2015 – 2016.
Effectiveness	**Effectiveness Indicator is Unhealthy.** Course completion percentages were in the 90-percentile range for all three years. Successful completion with a grade of C or better increased from 63% to 86% and dropped to 80% for students enrolled one level below college level math. Successful completion for students placing two levels below college level decreased from 61% to 57% and then increased to 59%. Successful completion for students three or more levels below college level fluctuated between 65% to 58% to 62%. The number of withdrawals decreased from 47 to 33 and then increased to 60. For the AtD cohort, although the number of students enrolled in one remedial/developmental course dropped from 416 to 382 from 2012 to 2013, the percent who successful completed one course increased from 66% to 70%. The percent of AtD students placing into remedial/developmental courses remains high at 77% to 81%, while the number who actually enroll in remedial/developmental courses is 43% to 44%. The percent of AtD students who successfully complete a college level course within their first academic year remains low at 9% to 10%. In Item #37A, persistence from fall to spring of students from one level below college level to college level is based on data obtained from one section of Math 27. Since the courses considered one-level below college level is not well defined between the STEM and nonSTEM pathways, the data provided is not reliable. For the STEM courses, Math 27 was considered one level below college level; whereas for non-STEM courses, Math 26 is the one level below college level. This discrepancy created the small numbers recorded in the ARPD data.
Overall Health	Overall Health is Cautionary.
Distance Education	Although there are video conference math courses offered between the Hilo and Palamanui campuses, there are presently no remedial/developmental courses offered online.
Perkins Core Indicators	Perkins Core Indicators are not applicable to the Liberal Arts Program and therefore not applicable to the Remedial/Developmental Math courses.

(if applicable)	
Performance Funding Indicators (if applicable)	Performance Funding Indicators are not applicable.
Describe any trends, and any internal and/or external factors that are relevant to understanding the program's data.	With a healthier economy, demand for all classes has dropped, not just the number of remedial/developmental math courses. There is a noticeable decrease in all courses offered at Hawaii Community College, not only in Liberal Arts, but in majority of the other programs. With a robust economy, enrollment usually decreases, while in a weaker economy, enrollment usually increases. Due to the College's commitment to decrease students' time to degree, the number of remedial/developmental offerings have been drastically reduced. A third factor is the College's introduction of additional Quantitative Methods courses, which has reduced the demand for remedial/developmental math classes traditionally offered.
Discuss other strengths and challenges of the program that are relevant to understanding the program's data.	The strength of this "program" remains the dedication and commitment of the math faculty who continue to help their students succeed not only in their present classes but in subsequent math classes as well. In addition faculty are committed to participating in professional development activities.

Analyze the program's IRO data for the year under review. Discuss how data/analysis provided by the Institutional Research Office has been used for program improvement. (For example, how results from CCSSE or IRO research requests have impacted program development.)	
Describe, discuss, and provide context for the data.	IRO data has not been used for program improvement.
Discuss changes made as a result of the IRO data.	No changes were made as a result of IRO data, although significant changes were made to this "program".

Report and discuss all major/meaningful actions and activities that occurred in the program during the review period. For example:	
Changes to the program's curriculum due to course additions, deletions, modifications (CRC, Fast Track, GE-designations), and re-sequencing	In response to the Vice President of Community Colleges' Graduation Initiative, all seven UHCCs were asked to decrease the time required for students to succeed in college level math and English courses. Two new courses were developed and added to the curriculum—Math 76 and Math 103, to enhance students' chances of succeeding in college level courses, such as Math 100 and Math 135.
New certificates/degrees	None
Personnel and position additions and/or losses.	One full-time math faculty member has resigned during this review period.
Other major/meaningful activities, including responses to previous CERC feedback.	CERC feedback was not provided.

Describe, analyze, and celebrate the program's successes and accomplishments. (For example, *more students were retained/graduated* OR *the program successfully integrated new strategies/technologies*.)	
Discuss what the program has been doing well. Are there areas that need to be maintained and strengthened? Please provide evidence if applicable (ex: program data reports, relevant URL links, etc.).	Math faculty continue to support student success. They continue to advise and tutor students and are willing to participate in professional development activities to hone their skills. Data needs to be collected to determine student success in these new courses and student success in the subsequent transfer or college level courses.

Describe, analyze, and discuss any challenges and/or obstacles the program has faced.	
Identify and discuss the program's challenges/obstacles.	Remedial/developmental math students should be supported with wraparound services, such as tutoring and advising services.
Discuss changes and actions taken to address those challenges, and any results of those actions.	Curricular changes were made. Math 1, Math 2, Math 76, and Math 103 were added to the curriculum , while Math 1ABCD, Math 22, Math 24, Math 25, Math 50, Math 51, and Math 66 were not offered in fall 2016.
Discuss what still needs to be done in order to successfully meet and overcome these challenges.	In order to successfully meet and overcome the challenges, additional tutoring services were offered by the Learning Center.

PROGRAM ACTION PLAN

Discuss the program's prior year's (AY14-15) action plan and results.	
Describe the program's action plan from the prior review period and discuss how it was implemented in AY15-16.	**Action Plan 1: Increase the number of full-time developmental math faculty.** Due to the UH Vice President's Graduation Initiative, the demand for remedial/developmental math courses has decreased drastically. Presently, there is no need to increase the number of faculty teaching. **Action Plan 2: Obtaining funds for quality professional development.** Funds were provided for professional development activities, specifically for math instructors teaching remedial/developmental math students. **Action Plan 3: Obtaining funds for increased classroom computer and calculator resources for developmental learners.** A computer classroom was utilized to teach Math 1 and Math 2 students during fall 2016. In addition, EdReady and

	Khanacademy programs have been utilized for math instruction. **Action Plan 4: Increasing the number of hours of accessibility for students in lab environments.** Remedial/developmental math students have additional hours in the computer classroom and in the Learning Center to practice their math skills. **Action Plan 5: To increase the number of STEM graduates the College needs to create successful strategies to support and encourage students to enter STEM areas of study.** Students are encouraged to enter STEM areas by advisers and faculty who teach in the STEM areas. **Action Plan 6: In accordance with the HawCC's Strategic Plan Goal #4 of the Hawaii Graduation initiative, the College should be improving the students' time to degree in completing college level math within their first two semesters.** The mathematics curriculum was changed to expedite completion of students' time to degree. Data has been and will continue to be collected to determine if the changes to the math curriculum have been successful.
Discuss the results of the action plan and the program's success in achieving its goals.	**Results of Action Plan 1:** Presently, there is no need to increase the number of faculty teaching remedial/developmental math courses. In the future, as the number of transfer level math courses increase, we may need to increase the number of math faculty. **Results of Action Plan 2:** Funds were provided for math faculty to participate in developmental education workshops and conferences. **Results of Action Plan 3:** Math 1 and Math 2 students have been provided the use of computers in the Hale Kea –Tech Room. Students are utilizing EdReady to learn remedial/developmental math concepts. Assessment of students are utilized with EdReady. **Results of Action Plan 4:** The students enrolled in Math 1 and Math 2 classes are afforded accessibility to computers in The Learning Centers, both on the Main Campus and in Hale Kea as well as during

	their class hours. The instructor is available during and after class if students require assistance. **Results of Action Plan 5:** Students are encouraged to enter STEM areas by advisers and faculty who teach in the STEM areas. **Results of Action Plan 6:** The mathematics curriculum was changed to expedite completion of students' time to degree. Data has been and will continue to be collected to determine if the changes to the math curriculum have been successful.
Discuss any challenges the program had in implementing that action plan or achieving its goals.	Challenges to the remedial/developmental program remain in the implementation of the Hawaii Graduation Initiative. Mathematics has been and will continue to be one of the major obstacles for remedial/developmental math students who wish to complete their degrees in a timely fashion.

- Did the program review its website during AY15-16? Please check the box below that applies.

☐ Reviewed website, no changes needed.

☐ Reviewed website and submitted change request to webmaster on _____(date)_____.

☐ Reviewed website and will submit change request to webmaster.

Please note that requests for revisions to program websites must be submitted directly to the College's webmaster at
http://hawaii.hawaii.edu/web-developer

Discuss the program's overall action plan for AY16-17, based on analysis of the Program's data and the overall results of course assessments of student learning outcomes conducted during the AY15-16 review period.	**Benchmarks and Timelines for implementation and achievement of goals.**

Action Goal 1: Data should be collected as a result of the new course offerings and closely scrutinized to determine what changes and/or actions should be implemented to enhance student success. `	**Benchmarks/Timelines:** Data should be collected for two academic years and compared with data from previous years, prior to implementation of these new courses.
How can this action Goal lead to improvements in student learning and attainment of the program's learning outcomes (PLOs)? Since improvements are frequently data driven, accurate data should be collected and utilized to measure student success. In fact, data on success rates that track students from their remedial/developmental classes into their college level classes would be very helpful to determine whether the recent changes are effective.	
Action Goal 2: **There should be better coordination between math faculty and counselors to improve placement of students in appropriate math classes.**	**Benchmarks/Timelines: Implementation of this goal should be ongoing.**
How can this action Goal lead to improvements in student learning and attainment of the program's learning outcomes (PLOs)? Student success is contingent on accurate placement in all math classes.	

Action Goal 3: **Quality professional development activities should be funded and offered for math faculty to improve their teaching strategies.**	**Benchmarks/Timelines:** Implementation should be ongoing.
How can this action Goal lead to improvements in student learning and attainment of the program's learning outcomes (PLOs)? Quality professional development workshops would directly improve student learning.	

RESOURCE IMPLICATIONS

NOTE: General budget asks are included in the 3-year Comprehensive Review. Budget asks for the following categories only may be included in the Annual review: health and safety needs, emergency needs, and/or necessary needs to become compliant with Federal/State laws/regulations.

Please provide a brief statement about any implications of or challenges with the program's current operating resources.

Since the Remedial/Developmental Math program is part of the Liberal Arts Program, budget asks for this program will be included in the Comprehensive Review of the Liberal Arts Program.

For budget asks in the allowed categories (see above):	
Describe the needed item(s) in detail.	

Include estimated cost(s) and timeline(s) for procurement.	
Explain how the item(s) aligns with one or more of the strategic initiatives of 2015-2021 Strategic Directions.	

http://hawaii.hawaii.edu/sites/default/files/docs/strategic-plan/hawcc-strategic-directions-2015-2021.pdf

LEARNING OUTCOMES ASSESSMENT

For all parts of this section, please provide information based on CLO (course learning outcomes) assessments conducted in AY 2015-16, and information on the aligned (PLOs) program learning outcomes assessed through those course assessments.

If applicable, please also include information about any PLO assessment projects voluntarily conducted by the program's faculty/staff.

Evidence of Industry Validation and Participation in Assessment (for CTE programs only)

Provide documentation that the Program has submitted evidence and achieved certification or accreditation from an organization granting certification in an industry or profession. If the program/degree/certificate does not have a certifying body, you may submit evidence of the program's advisory committee's/board's recommendations for, approval of, and/or participation in assessment(s). **Please attach copy of industry validation for the year under review and submit with the document.**

Courses Assessed

- List all program courses assessed during AY 2015-16, including those courses for which a follow-up "Closing the Loop" assessment was implemented during the review year.

Assessed Course Alpha, No., & Title	**Semester assessed**	**CLOs assessed (CLO# & text)**	**CLO-to-PLO alignment (aligned PLO# & text)**
Math 26 Elementary Algebra	Spring 2016	CLO #1 - Able to model and solve simple real-life problems algebraically. CLO #2 - Able to apply basic algebraic concepts. CLO #3 – Sufficiently prepared to meet the demands of the next sequential math course.	CLO # 1, 2, & 3 with– PLO #3 (Critical thinking) & PLO #6 (Quantitative Reasoning)
"Closing the Loop" Assessments Alpha, No., & Title	**Semester assessed**	**CLOs assessed (CLO# & text)**	**CLO-to-PLO alignment (aligned PLO# & text)**

Assessment Strategies

For each course assessed in AY 2015-16 listed above, provide a brief description of the assessment strategy, including:	
a description of the type of student work or activity assessed (e.g., research paper, lab report, hula performance, etc.);	Eleven problems were embedded in the Math 26 final exam. Students' responses to these problems were assessed by their instructor.
a description of who conducted the assessment (e.g., the faculty member who taught the course, or a group of program faculty, or the program's advisory council members, etc.);	The faculty members who taught the Math 26 course assessed each student's performance. A group of math faculty collaborated to create the rubric used.
a description of how student artifacts were selected for assessment (did the assessment include summative student work from all students in the course or section, OR were student works selected based on a representative sample of students in each section of the course?);	Each problem was selected based on its relevance to the course learning outcomes for Math 26. All students who were administered the final exam at the end of Spring 2016 were assessed.
a brief discussion of the assessment rubric/scoring guide that identifies criteria/categories and standards.	The rubric consisted of a scoring range of 0 – 2, with 0 recorded if the student was incorrect, 1 recorded if partially correct, and 2 recorded if correct.

Expected Levels of Achievement

- For each course assessed in AY 2015-16, indicate the benchmark goal for student success for each CLO assessed.
  - example 1: "85% of students will Meet Standard or Exceed Standard for CLO#1";
  - example 2: "80% of students will attain Competency or Mastery of CLO#4."

Assessed Course Alpha, No., & Title	**Benchmark Goal for Student Success for Each CLO Assessed**
Math 26 Elementary Algebra	Faculty expectations were that the combined averages for all students would be at least 70% of the total possible points for all CLOs.

Results of Course Assessments

For each course assessed in AY 2015-16:	
provide a description of the summative assessment results in terms of students' attainment of the CLOs and aligned PLOs.	The average score for the students who were administered final exams was 13.803 out of 22 possible points. For the combination of all Math 26 students who took the final exam, 63% met the criteria for CLOs #1 - #3.

Other Comments

Include any additional information that will help clarify the program's course assessment results.	
Include comparisons to any applicable College or related UH-System program standards, or to any national standards from industry, professional organizations, or accrediting associations.	
Include, if relevant, a summary of student survey results, CCSSE, e-CAFE, graduate-leaver surveys, special studies, or	

other assessment instruments used that are not discussed elsewhere in this report.	

Next Steps – Assessment Action Plan

Describe the program's intended next steps to improve student learning, based on the program's overall AY 2015-16 assessment results. Include any specific strategies, tactics, activities, or plans for instructional change, revisions to assessment practices, and/or increased student support.	
Instructional changes may include, for example, revisions to curriculum, teaching methods, course syllabi, course outlines of record (CORs), and other curricular elements.	Plans for instructional change and revisions to the math curriculum will be implemented based on success rates of students obtained in the next four semesters—spring 2017 through fall 2018. After the data has been collected and analyzed, then faculty will discuss effective teaching strategies.
Proposals for program modifications may include, for example, re-sequencing courses across semesters, or re-distribution of teaching resources, etc.	Program modifications would be implemented if warranted.
Revisions to assessment strategies or practices may include, for example, revisions to learning outcome statements (CLOs and/or PLOs), department or course assessment rubrics (criteria and/or standards), development of multi-section/course summative assignments or exams, etc.	No anticipated revisions to assessment strategies or practices.
Student support and outreach initiatives may include, for example, wrap-around student	Wrap-around student services, and continued tutoring should continue.

services, targeted tutoring and/or mentoring, etc.	

Part VI. Cost Per SSH

Please provide the following values used to determine the total fund amount and the cost per SSH for your program:

General Funds = $_____
Federal Funds = $_____
Other Funds = $_____
Tuition and Fees = $_____

Part VII. External Data

If your program utilizes external licensures, enter:

Number sitting for an exam _____
Number passed _____