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## University of Hawaii Community Colleges

### Annual Report of Program Data Analysis Preview

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### PREVIEW

#### College: Kauai Community College

#### Program: Remedial/Developmental Math

Program did not provide date of the last comprehensive review.

### Program Description

The Developmental Math program at Kauai Community College consists of all math courses that are below college level and is coordinated by the math department as part of their regular curriculum offerings. Developmental Math is further supported by the Tutoring Center and has also been supported by College Success' Developmental Math Coordinator. As of Fall 2015, the duties of the Developmental Math Coordinator are absorbed under the Mathematics department in the Science and Mathematics Division (SAM).

The mission of the College Success initiatives is to provide exemplary programs for student learning that assist and engage students in acquiring the skills that lead to increased student success and retention, and provide the foundation for the achievement of academic, career and personal goals.

The Mathematics Department lies within the Liberal Arts program which is guided by the KCC mission. Our mission states that "Kauai Community College provides open access education and training in an ethical and innovative student-centered and community-focused environment, nurturing life-long learners who appreciate diversity and lead responsible and fulfilling lives."

### Part I. Quantitative Indicators

#### Overall Program Health: **Cautionary**

Demand Indicators		Program Year			Demand Health Call
		12-13	13-14	14-15	
1	Enrolled in any Remedial/Developmental	325	225	185	<b>Unhealthy</b>
2	Semester Hours Taught	62	44	47	
3	* Student Semester Hours (SSH) Taught	1203	802	647	
4	Full Time Students (Fall) Enrolled	124	80	66	
5	Full Time Students (Spring) Enrolled	72	39	16	
6	Number of Classes Taught	19	13	14	
Achieving the Dream		AtD Fall Cohort			
		2011	2012	2013	
7	Percent AtD Cohort with Placement	76%	73%	75%	
8	AtD Cohort Placing Remedial/Developmental	59%	56%	55%	
9	Cohort Enrolling Remedial/Developmental	129	120	110	
9a	Percent Cohort Enrolling Remedial/Developmental	58%	57%	58%	

10	* Increase Percent Enrolling	-9%	-1%	1%
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Efficiency Indicators		Program Year			Efficiency Health Call
		12-13	13-14	14-15	
11	Average Class Size	19.4	18.5	13.9	<b>Healthy</b>
12	* Fill Rate	87.8%	85.7%	77.3%	
13	Number of Low-Enrolled (<10) Classes	0	1	5	
14	* BOR Appointed Faculty (FTE)	0.9	1	1	
15	Non-BOR Appointed Faculty Teaching Classes	4	2	3	
16	Percentage Classes Taught by Regular Discipline Faculty	47%	69%	64%	
17	Percentage Classes Taught by non Regular Discipline Faculty	53%	31%	36%	
18	Program Budget Allocation	Not Reported	\$70,956	Not Yet Reported	
18b	Tuition and Fees	Not Reported	\$0	Not Yet Reported	
19	Cost per SSH	Not Reported	\$88	Not Yet Reported	

\*Data element used in health call calculation

Last Updated: July 30, 2015

Effectiveness Indicators		Program Year			Effectiveness Health Call
		12-13	13-14	14-15	
Retention (Course Completion)					<b>Unhealthy</b>
20	1 Level Below College Level	95%	94%	87%	
21	2 Levels Below College Level	86%	92%	87%	
22	3 or More Levels Below College Level	N/A	0%	0%	
Successful completion (Equivalent C or Higher)					
23	1 Level Below College Level	72%	57%	65%	
23a	1 Level Below College Level	94	57	41	
24	Withdrawals (Grade = W)	6	6	8	
25	2 Levels Below College Level	55%	64%	55%	
25a	2 Levels Below College Level	131	89	73	
26	Withdrawals (Grade = W)	33	11	17	
27	3 or More Levels Below College Level	N/A	0%	0%	
27a	3 or More Levels Below College Level	N/A	0	0	
28	Withdrawals (Grade = W)	N/A	0	0	

Achieving the Dream		AtD Fall Cohort		
		2011	2012	2013
29	Cohort Enrolled in Remedial Developmental Course	129	120	110
30	Cohort Successful Completion at Least One Remedial/Developmental Course within First Academic Year	86	73	73
31	Percent Cohort Successful Completion	67%	61%	66%
Remedial/Developmental Pipeline				
32	AtD Cohort Size	374	374	343
33	Percent AtD Students Placing Into Remedial/Developmental Level	59%	56%	55%

34	Percent AtD Cohort Enrolled in Remedial/ Developmental Course	34%	32%	32%
35	Percent AtD Cohort Successfully Completing Any Remedial/ Developmental Course Within First Academic Year	39%	35%	39%
36	Percent AtD Cohort Successfully Completing College Level Course Within First Academic Year	24%	32%	36%

Successful Next Level		Program Year		
		12-13	13-14	14-15
Persistence (Fall to Spring)				
37	* Percent From 1 Level Below College Level, To College Level	67.3%	32.3%	26.9%
37a	From 1 Level Below College Level, To College level	64	44	42
38	Percent From 2 Levels Below College Level, To 1 Level Below	61%	44%	34%
38a	From 2 Levels Below College Level, To 1 Level Below	51	38	28
39	Percent From 3 or More Levels Below College Level, To 2 Levels Below	N/A	N/A	N/A
39a	From 3 or More Levels Below College Level, To 2 Levels Below	N/A	N/A	N/A
Success in Subsequent Level (Equivalent C or Higher)				
40	College Level From 1 Level Below	45	30	18
40a	* Percent College Level From 1 Level Below	70.3%	68.1%	42.8%
41	1 Level Below From 2 Levels Below College Level	30	26	17
42	2 Levels Below From 3 or More Levels Below College Level	N/A	N/A	N/A

\*Data element used in health call calculation

Last Updated: July 30, 2015

[Glossary](#) | [Health Call Scoring Rubric](#)

## Part II. Analysis of the Program

[NOTE: On 10/25/15, it was noticed that the program courses for the rem/dev math program were listed as Math 21, 22, 24, 25. This leaves out two important courses in our rem/dev program: Math 26 and Math 75. Efforts will be made to determine whether the data are accurate, and to remedy the situation if need be. If this note remains, it is a sign that these corrective actions were not completed before ARPD submission was finalized.]

### Results of Previous Year's Action Plan:

Each action item from the previous year is listed below, along with a brief discussion of the results of the item. Note that no resources were requested for these action items.

**Collaborate with the UHCC Dev Ed Group:** A Dev Ed group meeting in Spring 2015 clarified the topics and goals of both STEM and non-STEM pathways. These conversations led into the new systemwide dev ed initiatives that were discussed in Summer 2015. As a result, Kauai CC's Math 75 and Math 26 became

**Discuss with Honolulu CC on Developmental Student Enrollment Strategies:** We do not have records of a conversation. However, studying Honolulu CC led us to conclude that their strategies on enrollment may not be widely applicable at Kauai CC due to the heavy CTE-program

focus at Honolulu CC. When math courses are included and scheduled in as part of a cohorted program, enrollment numbers will inevitably be high. This mirrors national conversations about "structured pathways". The math department supports this idea.

**Find out Problems and Solutions to Increase Persistence Rate for 1 level below courses:** It is not clear that any solutions were found. This item is largely moot due to the new systemwide dev ed initiatives begun in Summer 2015. As part of this initiative, the math department will request that it become mandatory for most students to persist in math through a college-level course (see Part III. Action Plan). This should address a large portion of the persistence problem. One option that should be considered is for the college to conduct focus groups to learn about persistence from the students' point of view.

**Implementation of Math 75:** Math 75, Fundamentals of Math, was piloted in Spring 2014 and expanded for general offering in Fall 2014. The overall success rate for Math 75 has been 69% (93/135). This is an excellent success rate, considering that the entry point is students who have completed prealgebra (Math 21 or 22), with a Compass placement level of P47 / A0. This level was historically considered "two levels below", however Math 75 was designed to have an exit point of Math 100, 111, or 115. Therefore, it serves as the "Non-STEM" developmental pathways course for the college.

For Fall 2016, Math 75 will be changed into Math 75X. This adds prealgebra content, so that the course will become open-enrollment.

**Offer ALP Math 25/103 and 75/115:** This was done in Fall 2014, using an 8-week / 8-week format. The 75/115 ALP was offered again in Fall 2015. See the narrative under "Effectiveness" for more detail. These offerings were both very successful:

Math 25/103: 10 of 15 students beginning in Math 25 earned a C or better in Math 103 within a single term.

Math 75/115: 19 of 24 students beginning in Math 75 earned a C or better in Math 115 within a single term.

**Re-design Math 21:** A supplemental instruction course, Math 16, was created, proposed and approved by the college. This course would have allowed the mainstreaming of Math 21 students into Math 22, with supplemental support. However, due to the new dev ed initiatives at the system level, Kauai CC will be discontinuing Math 21 and Math 22 altogether. These students will instead take Math 75X, which will allow them to reach and complete a college-level course within their first year. Nevertheless, the ideas generated as part of the Math 16 project will be used, in new form, as parts of Math 75X and Math 88, which will be a new support course for "one-level below" students who enroll immediately in Math 103.

#### Analysis of Program Data:

##### 1) Demand Health Call is "Unhealthy".

The percentage of the students who placed into remedial/developmental math who actually enrolled in rem/dev classes has remained steady near 58% for the past three academic years. The increase from AY14 of slightly less than 1 percentage point is small enough to earn an "unhealthy" call for demand. An increase of 3 percentage points or more would earn a "healthy" and 1-2.9 percentage points would be "cautionary".

Table 1 below shows that Kauai CC's percent enrolling is right at the system average.

Table 1	HAW	HON	KAP	KAU	LEE	MAU	WIN	UHCC Avg.
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Percent Cohort Enrolling Rem/Dev (AY15)	57%	70%	49%	58%	63%	49%	63%	58%
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With the new UHCC system strategic plan, the college will be working towards the goal of 75% of incoming "1-level below" students completing college-level math in their first term and 70% of incoming "2+ levels below" students completing college-level math in their first year. This is a very ambitious goal. There are not even enough of these students *taking rem/dev math*, much less college-level math in the first year, to meet these goals, even assuming that 100% of students would pass their courses.

Action:

The math department will recommend to the college that taking math in the first term become mandatory for most students. This includes full-time AA-degree students and some CTE students, depending on agreement from individual programs. Part-time AA-degree students would be required to take math by their second term.

**2) Efficiency Health Call is "Healthy".**

The Efficiency Health Call is measure by the following two areas:

- I. Class Fill Rate
- II. Student/ BOR Faculty Ratio

Rem/dev math classes have maintained a "healthy" fill rate, although the fill rate has dropped from the previous years to 77%. This is just above the "healthy" cutoff of 75%. There are five low-enrolled sections. Looking into the sections, it appears that only two of them occurred during the fall and spring terms. These were Math 21 (42198) and Math 26 (43122). The Math 21 section was offered at night, when our classes are typically low-enrolled. The Math 26 section was offered at 3pm, which is an unusually late time for that class. It was thought that this offering would open up opportunities for students who may not be able to take it earlier. The math department will continue to balance efficiency and access for students, which may result in some lower-enrolled sections from time to time.

The other three low-enrolled sections appear to be the ones offered in the summer, under the "one-room schoolhouse" approach where several different math courses are offered simultaneously. This is done intentionally to improve efficiency so that the courses may be offered in the summer. Otherwise the low numbers would make it impossible to offer them. However, each course offered gets its own CRN, and it appears that this arrangement has resulted in low-enrolled sections of Math 21 (44002), 22 (44001), and 25 (44004). The combined enrollment for these classes was 12, therefore as a single section the offering would not be considered low-enrolled.

"BOR Appointed Faculty" is 1. The college has one faculty member appointed to teach rem/dev courses only. Other full-time faculty occasionally teach rem/dev courses when possible.

Action:

The math department will continue to offer the summer "one-room schoolhouse" when faculty scheduling permits.

**3) Effectiveness Indicator is "Unhealthy".**

The Efficiency Health Call is measure by the following two areas:

- I. Persistence (Fall to Spring) from 1 level below college to College level in percentage.
- II. Success rate in College Level Course from 1 level below.

There are some things that appear not to have been part of the computations for the data presented in the ARPD. They will be described

below, and adjustments will be computed for the efficiency data. The resulting data would still result in "Unhealthy" health calls.

In Spring 2015, the math department worked with the Culinary Arts and AMT programs to decide on a plan to offer a 2-week summer Math 100 course that would begin just after the end of Spring term final exams. Considering that this plan was made in lieu of the students taking a Spring course, it makes sense to include these students in the 14-15 AY data for persistence and success next level.

Five students who are likely to be considered in the AtD cohort for the 14-15 academic year were among the students who took this course, and all five earned a C or better. Of these, four were from a "1-level below" developmental course in the fall term.

As a larger factor, it seems that there was an oversight by the college or in the data analysis by the system regarding the accelerated 8-week / 8-week Math 25/103 and Math 75/115 courses taught in Fall 2014. These students do not appear to have been counted in both the persistence and success measures in the AtD data. There are 22 students in this group who are likely to be considered in the AtD cohort for 14-15. Of those, 18 were successful in Math 103 or 115.

Including all of these students would change the data as follows:

Table 2 Measure	14-15	14-15 (revised)
37 * Percent From 1 Level Below College Level, To College Level [PERSISTENCE]	26.9%	43.6%
37a From 1 Level Below College Level, To College level	42	68
40a * Percent College Level From 1 Level Below [SUCCESS]	42.8%	58.8%

We will continue below with a discussion of the revised data.

Table 3 below shows how the Kauai CC data compares against the 14-15 data for other colleges in the UH system on some key measures of effectiveness [admittedly, the other colleges' data are not benefitting from adjustments as we have done for our college].

Table 3	Measure	HAW	HON	KAP	KAU	LEE	MAU	WIN	UHCC Avg.
33	Percent AtD Students Placing Into Remedial/ Developmental Level	77%	54%	38%	55%	68%	65%	61%	60%
36	Percent AtD Cohort Successfully Completing College Level Course Within First Academic Year	11%	37%	51%	36%	18%	19%	27%	29%
37	* Percent From 1 Level Below College Level, To College Level [PERSISTENCE]	39%	34%	41%	44%	35%	21%	44%	36%
37a	From 1 Level Below College Level, To College level [PERSISTENCE]	10	84	196	68	242	64	47	N/A

40a	* Percent College Level From 1 Level Below  [SUCCESS]	70%	46%	74%	59%	48%	73%	55%	60%
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From an overall success perspective, the most important single number here is the percent of the cohort who successfully completes a college-level course within the first academic year. This has been recognized by the VPCC as so important that it is the focus of the strategic goal for dev ed in the new strategic plan.

On this measure, Kauai CC has achieved excellent success compared to the rest of the UH system. The only colleges with higher marks are Kapiolani CC, which has a much lower percent of its cohort placing into rem/dev, and Honolulu CC, where many more students are in CTE programs. For these programs, the target "college-level" courses are not the same as for AA programs, which makes the data less comparable.

The major structural contributors to our excellent results are discussed below.

#### Accelerated developmental pathways:

The college has been operating the accelerated algebra course Math 26 for several years. It has continued to produce a "pipeline" success rate that is about double that of the old Math 24/25 pathway.

The college piloted a section of Math 75, Fundamentals of Math, in Spring 2014. This section was designed specifically for Culinary Arts students. For Fall 2014, the course was redesigned and a new textbook was developed so that the course could be opened up to all students. The current textbook contains a mixture of chapters from two textbooks: one is a quantitative literacy-based textbook and the other is a technical math book. The mixture of topics from these two books allow Math 75 to prepare students for a wide variety of mathematical situations including technical applications, science applications, the study of logical arguments, and statistics.

Thanks to these accelerated pathways, Kauai CC does have a "3-levels below" math course. Only those students placing into pre-algebra have been more than one year away from completing a college-level math course.

Due to the system-wide acceleration initiative, the college is incorporating prealgebra into the new Math 75X course, resulting in an elimination of the "2-levels below" status as well. Beginning Fall 2016, all students will enter the college within reach of completing a college-level math course in their first year.

#### Accelerated Courses:

In Fall 2014, the math department experimented with offering two sections of compressed 8 week / 8 week courses. One was Math 25 / Math 103 and the other was Math 75 / Math 115. Both of these offerings gave excellent results. Of the 15 students in the 25/103, ten earned a C or better in Math 103. Of the 24 students in 75/115, nineteen earned a C or better in Math 115. (Note that not all of these students are from the incoming AtD cohort).

The math department has continued with offering a 75/115 section in Fall 2015, although the enrollment in the course was disappointing this time (10 students).

The 8 week / 8 week model is a viable possibility for future offerings in the new developmental acceleration initiative for the system. Despite the excellent success of the 8/8 model, the math department has decided to utilize corequisite models instead of the 8/8 model for the time being. This is because corequisite models offer the opportunity of even greater efficiency than 8/8 models if the same or better success can be achieved. The 8/8 models can always be a proven fallback if corequisite models are not successful.

#### Alternative Placement:

Kauai CC has been a leader in piloting the use of high school transcript information to supplement placement decisions, along with Maui College. Students have been allowed to place into entry college-level math courses (100, 103, 111, 115) despite not placing via Compass, if they earned at least a 2.6 overall high-school GPA and had passed Algebra II with a C or better.

In the two years of data we have for the pilot placement in math, 61% of participants (25 of 41) have passed a college-level math course in their first semester. These are students who otherwise would have placed into a developmental course. Based on pipeline data, it would be expected that only ~37% (~15 of the 41) students would have eventually passed a college-level course if they had entered the developmental sequence where they placed.

#### Improvements in Efficiency:

As can be seen from the data, improvements in efficiency could come from:

- Improving the % of students who are referred to rem/dev who actually enroll in a math course. This has hovered around 58% for several years (See data element 9a).
- Improving the persistence of students from one math level to the next.
- Improving the success of students in the next level of the pipeline.

It should be noted that the success of students in the next level (40a) has been strong in the past two years, so the lower value for this year (59%, adjusted) is not as concerning as it would be if numbers had been poor for several years. It is possible that the 14-15 year is an anomaly. With the small numbers of students at our college, we always have to be on the lookout for spikes in the data that don't necessarily have any reason behind them.

Analyses of grade data consistently show that students with lower grades in their developmental course have lower success rates in the subsequent college-level course. For students taking their college-level course between Fall 12 to Summer 15, we find the following success rates in Math 100, 103, 111, 115:

Table 4	
Grade in dev course (Math 25, 26, or 75)	Combined success rate in college-level course (100, 103, 111, 115)
A	85% (159/187)
B	66% (89/134)
C	45% (74/164)

As described above, the subsequent success rates for C students is low. Being a small college, we have the ability to work with these students on a one-on-one basis to help improve success their success in the next course.

#### Action:

To address the % enrollment and persistence issues: The math department will propose that enrollment in math in the first term and continued enrollment until completion of a college-level math course be mandatory for most students.

To address the success in next level issue: Students earning a C grade will be considered "at-risk" from the beginning of the next semester, and support services including peer tutoring and study groups will be offered immediately.

### Part III. Action Plan

Program Goal	Action Item	Resources Needed	Person(s) Responsible	Timeline	Indicator of Improvement	Status



<p>Improve % enrollment in math courses for students with rem/dev placement;</p> <p>Improve the persistence from one math level to the next.</p>	<p>The math department will propose that enrollment in math in the first term and continued enrollment until completion of a college-level math course be mandatory for most students.</p> <p>Exceptions for PT students and CTE students.</p>	None	Jonathan Kalk (serving as Dev Math Coordinator)	Discussions are currently underway, and the issue will be settled by the end of the Fall 15 term.	Analyze same indicator for F16 term.	In progress
<p>Improve the success of students in the next level of the pipeline</p>	<p>Students earning a C grade will be considered "at-risk" from the beginning of the next semester, and support services including peer tutoring and study groups will be offered immediately.</p>	Continued support by the college to the peer tutor program.	Jonathan Kalk (serving as Dev Math Coordinator)	Implemented in the transition from F15 to S16.	Success rates in the next course for students earning a C in the previous course will improve.	In progress

## Part IV. Resource Implications

In the absence of a Dev Math Coordinator position, the math department requests a continuing 3 credits of assigned time per year to be assigned to the acting Dev Math Coordinator. This release time will be used to review the Dev Math program and initiatives and to monitor and continue the execution of plans for continual improvement.

The math department requests continuing support for the tutoring center, including peer tutors for math courses as needed.

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