Mathematics Discipline Meeting  
Thursday, February 5, 2015  
Minutes

Present: Clayton Akatsuka, Weiling Landers, Jean Okumura, Navtej (Johnny) Singh, Jody Storm.  
The meeting was called to order at 1:30 pm in the Mana’o Conference Room 107.  
The minutes of the January 29, 2015 meeting were accepted as circulated.

1. Math 21A/21B Course Level Assessment for Fall 2014 – Clayton Akatsuka  
   o Faculty were reminded that benchmarks are arbitrary. Jan Lubin uses 80%. Clayton used 75%.  
   o A copy of the assessment is attached to these minutes.  
   o Upon review of the course level assessment, it was noted that some SLOs were redundant.  
     In other instances, the SLOs needed to be streamlined.  
   o Changes for Math 21A SLOs:  
     ➢ SLO 3 was eliminated since it was basically the same as SLO #4.  
     ➢ Therefore, the SLOs will be:  
       1. Apply precise mathematical language and symbols in written and/or oral form.  
       2. Perform operations with whole numbers, fractions, mixed numerals, and decimal numbers.  
       3. Use algebraic techniques to analyze and solve applied problems.  
   o Changes for Math 21B  
     ➢ All of the revisions to the SLOs were designed to streamline the SLOs.  
     ➢ Revise SLO #2 to read: Perform operations with real numbers.  
     ➢ Revise SLO #4 to read: Use appropriate algebraic or geometric techniques to analyze and solve applied problems.  
     ➢ Delete SLO #5 & #6  
     ➢ Therefore, the SLOs will be:  
       1. Apply precise mathematical language and symbols in written and/or oral form.  
       2. Perform operations with real numbers.  
       3. Use fundamental properties to solve equations.  
       4. Use appropriate algebraic or geometric techniques to analyze and solve applied problems.  
   o Clayton will submit the curriculum form.  
   o To help improve success, the discipline encourages instructors to provide more practice for applied problems.
2. Math 100 – Jody Storm
   o Jody has not received all input yet.
   o There seems to be no consensus on calculators.

3. Ecafe Questions
   o Certain questions are fixed and all faculty in the discipline must use those questions. These
     questions are fixed by discipline not department.
   o Items #2, 6, 8, and 10 may not be appropriate for online classes. Therefore, those
     items/questions will be eliminated from the list of required items/questions.
   o However, for face-to-face classes, items #2, 6, and 8 are highly recommended. Therefore,
     faculty for face-to-face classes should add these items to their list of items/questions.
   o It was decided to allow faculty the option to add up to 15 additional items/questions instead
     of only 5 additional items/questions.
   o See the attachment for the list of required items/questions from last year.

4. Math 231
   o Jody Storm will work on the curriculum modification for the catalog description of Math
     231.

5. Fall 2015 Course Distribution
   o Day Classes
     Math 21 – 1 section  Math 103 – 4 sections
     Math 21A/21B – 2 sections or 3 sections  Math 111 – 1 section
     Math 24 – 3 sections  Math 135 – 2 sections
     Math 25 – 4 sections  Math 140 – 1 section
     Math 26 – 1 section  Math 203 – 1 section
     Math 28 – 1 sections lecture  Math 205 – 1 section, 1 section online
     Math 28/29 – 1 section  Math 206 – 1 section
     Math 100 – 4 sections lecture, 2 sections online  Math 231 – 1 section
     Math 101 – 1 section  Math 232 – 1 section
     Math 115 – 1 section

   o Evening Classes
     ➢ There was discussion about what classes to offer in the evening.
     ➢ Since there is a Math 135 in the evening this semester, we should ask Kim (the
       instructor) to poll her students to find out how many need Math 140 in the evening.
     ➢ Since there is a Math 25 in the evening this semester, there was a Math 28 in the
       evening in fall 2014, and Math 100 in the evening was cancelled this semester, maybe
       we should offer Math 100.
     ➢ It was suggested that we offer Math 24 and the multi-level Math 21, 28, 29 in the
       evening for next semester.
     ➢ Jean will work with these ideas to see what is best.
6. Other Business
   o Math 28/29 Multi-level
     ➢ There was a question about whether there a better success rates for these classes as a result of the revision of the curriculum.
     ➢ Jean will request information from Allyn Fetherolf who taught the Math 28/29 in fall 2014.
   o Math Course Pathways
     ➢ Johnny shared the Math Course Pathways that he developed to help students to see what the next course the can take is.
     ➢ It was suggested that instead of STEM Pathway, it might be better to call it the Calculus Pathway.
     ➢ It was also suggested to change the symbol used to indicate that a course may be offered in multiple modes because it was hard to see the current symbol.

The meeting was adjourned at 3:18 pm. (Minutes by J. Okumura)
Attachment.
Assessment of MATH 21A – Basic College Mathematics I and MATH 21B – Basic College Mathematics II.

This is an assessment report for MATH 21A and MATH 21B as pre-requisite courses for MATH 25 – Elementary Algebra II and MATH 28 – Developmental Mathematics II, both of which will satisfy WCC’s special graduation requirement for the AA degree (Math Placement: Place into Math 100 or complete Math 25 or higher with a “C” or better.)

The following matrices will first align the student learning outcomes (SLO) for MATH 21A with those of MATH 21B, and the second will align the MATH 21B SLOs with those of MATH 25 and MATH 28.

Embedded assessment in the cumulative final examination will be used to assess how well students enrolled in MATH 21A course satisfy the course SLOs. This method will also be used to assess the MATH 21B SLOs. The success rate of satisfying the MATH 21A SLOs will be an indicator of how well students, who are enrolled in this course, are prepared for MATH 21B, the next course in the sequence. Similarly, for MATH 21B and the next course in the sequence, MATH 25 or MATH 28.

In Fall 2014, three sections of MATH 21A were taught by three instructors:

MATH 21A (CRN 62520/CRN62577*) Clayton K. Akatsuka MWF 8:30 am – 9:45 am n=22

MATH 21A (CRN 62522/CRN 62578*) Allyn Fetherolf MWF 10:00 am – 11:15 am n=21

MATH 21A (CRN 62612) Kevin Takayama MWF 11:30 am – 12:45 pm n=19

*Note: The duo CRN numbers indicate those sections designated for the Freshmen Cohorts.
Note: n represents the number of students taking the final exam in each MATH 21A section.

In all three classes of MATH 21A (n=62, total number of students taking the final exam in three sections of MATH 21A), the departmental cumulative final exam used was Form A.

<table>
<thead>
<tr>
<th>MATH 21A:</th>
<th>Final Exam Question Aligned to SLO:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SLO 1</strong></td>
<td>Apply precise mathematical Language and symbols in written and/or oral form.</td>
</tr>
<tr>
<td><strong>SLO 2</strong></td>
<td>Perform operations with whole numbers, fractions, mixed numerals, and decimal numbers.</td>
</tr>
<tr>
<td><strong>SLO 3</strong></td>
<td>Apply symbolic forms to represent, model, and analyze mathematical situations to solve problems.</td>
</tr>
</tbody>
</table>
SLO 4
Use algebraic techniques to analyze and solve applied problems.

#23, #24, #25, #26

Assessment Task, Success Criteria, and Assessment Result: MATH 21A

SLO 1
Apply precise mathematical Language and symbols in written and/or oral form.

#3, #6, #8, #15, #17

Criteria for success: A student satisfies this SLO if three of the five questions are answered correctly with minor error(s). Student’s work shows the application of correct operations and processes using appropriate symbolism.

Benchmark: 75% of the students will satisfy this SLO.

Assessment Results: 100% of the students met this SLO. Therefore, the benchmark for this SLO was met.

SLO 2
Perform operations with whole numbers, fractions, mixed numerals, and decimal numbers.

Whole Numbers
#1, #2, #4

Fractions
#7, #10, #12, #16

Mixed Numerals
#5, #9, #11, #13

Decimals
#14, #20, #21

Criteria for success: A student satisfies this SLO if two of the three questions and three of four questions in each appropriate area are answered correctly with minor error(s).

Benchmark: 75% of the students will satisfy this SLO.

Assessment result: The Criteria for Success requires that a student meet the described conditions in all four areas: Whole numbers, fractions, mixed numerals, and decimals. Forty out of sixty-two students met this criteria. Therefore, 64.5% satisfied SLO 2 – the benchmark of 75% was not met.

However, a closer analysis of the four areas of this SLO reveal the following:

- 85.5% of the students met the condition for Whole Numbers,
- 91.9% of the students met the conditions for Fractions,
- 82.3% of the students met the conditions for Mixed Numerals, and
98.4% of the students met the conditions for Decimals.

Furthermore,

- 64.5% of the students met all four conditions and therefore satisfied this SLO.
- 95.2% of the students met at least three of the four conditions, and
- 98.4% of the students met at least two of the four conditions.

Overall, although the 75% benchmark was not met, only one student did not meet the conditions for three of the four areas, and no student missed all four areas. These basic skills for MATH 21A are utilized throughout the course and are pre-requisite skills for the other SLOs in which the benchmarks were met. With this in mind, a review of the criteria for success and/or the final exam questions should be undertaken.

**SLO 3**
Apply symbolic forms to represent, model, and analyze mathematical situations to solve problems.

#17, #18, #22

Criteria for success: A student satisfies this SLO if two of the three questions are solved correctly with minor error(s). Student must show appropriate work neatly and orderly.

Benchmark: 75% of the students will satisfy this SLO.

**Assessment Result:** 95.6% of the students met this SLO. Therefore, the benchmark for this SLO was met.

**SLO 4**
Use algebraic techniques to analyze and solve applied problems.

#23, #24, #25, #26

Criteria for success: A student satisfies this SLO if three of the four problems are answered correctly with minor error(s). A student’s solution must include an appropriate LET statement indicating a variable and what it represents, an appropriate equation, a step-by-step solution of the equation, and the answer written in a complete sentence in the context of the problem including the appropriate units.

Benchmark: 75% of the students will satisfy this SLO.
Assessment Result: 85.5% of the students met this SLO. Therefore, the benchmark for this SLO was met.

In Fall 2014, three sections of MATH 21B were taught by three instructors:

MATH 21B (CRN 62521/CRN62579*) Clayton K. Akatsuka MWF 8:30 am – 9:45 am  
n=20

MATH 21B (CRN 62523/CRN 62580*) Allyn Fetherolf MWF 10:00 am – 11:15 am  
n=18

MATH 21B (CRN 62613) Kevin Takayama MWF 11:30 am – 12:45 pm  
n=14

*Note: The duo CRN numbers indicate those sections designated for the Freshmen Cohorts. Note: n represents the number of students taking the final exam in each MATH 21B section.

In all three classes of MATH 21B, the departmental cumulative final exam used was Form A.

<table>
<thead>
<tr>
<th>MATH 21B:</th>
<th>Final Exam Question Aligned to SLO:</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLO 1</td>
<td>#13, #17, #19, #22</td>
</tr>
</tbody>
</table>
### Assessment Task, Success Criteria, and Assessment Result: MATH 21B

<table>
<thead>
<tr>
<th>SLO 1</th>
<th>Apply precise mathematical Language and symbols in written and/or oral form.</th>
<th>#13, #17, #22</th>
</tr>
</thead>
</table>

Criteria for success: A student satisfies this SLO if two of the three questions are answered correctly with minor error(s). Student’s work shows the application of correct operations and processes using appropriate symbolism.

Benchmark: 75% of the students will satisfy this SLO.

**Assessment Results:** 94.2% of the students met this SLO. Therefore, the benchmark for this SLO was met. This high success rate may be attributed to conducting the assessment at the end of the course. Students would have had the opportunity to learn and practice the mathematical language and symbols throughout the course. “Perfect practice makes perfect.”

<table>
<thead>
<tr>
<th>SLO 2</th>
<th>Perform operations with integers, rational numbers, real numbers, and variable expressions.</th>
<th>Integers: #1, #7, #8, #12</th>
<th>Rational Numbers: #2, #4, #5, #9</th>
</tr>
</thead>
</table>

SLO 3: Use fundamental properties to solve equations.
- #27, #28, #29, #30

SLO 4: Use algebraic techniques to analyze and solve applied problems.
- #23, #24, #25

SLO 5: Apply mathematical formulas to determine measurements in geometric figures.
- #20, #21, #26

SLO 6: Apply concepts and principles of percents to solve applied problems.
- #23, #25

### SLO 2

<table>
<thead>
<tr>
<th>SLO 2</th>
<th>Perform operations with integers, rational numbers, real numbers, and variable expressions.</th>
<th>Integers: #1, #7, #8, #12</th>
<th>Rational Numbers: #2, #4, #5, #9</th>
</tr>
</thead>
</table>

- Integers: #1, #7, #8, #12
- Rational Numbers: #2, #4, #5, #9
Criteria for success: A student satisfies this SLO if three of the four questions, four of the six questions, and one of the two questions in each appropriate area are answered correctly with minor error(s).

Benchmark: 75% of the students will satisfy this SLO.

Assessment result: The Criteria for Success requires that a student meet the described conditions in all four areas: Integers, rational numbers, real numbers, and variable expressions decimals. Twenty-six out of fifty-two students met this criteria. Therefore, 50.0% satisfied SLO 2 – the benchmark of 75% was not met.

However, a closer analysis of the four areas of this SLO reveal the following:

- 75.0% of the students met the condition for integers,
- 73.1% of the students met the conditions for rational numbers,
- 71.2% of the students met the conditions for real numbers, and
- 100% of the students met the conditions for variable expressions.

Furthermore,
- 50.0% of the students met all four conditions and therefore satisfied this SLO.
- 76.9% of the students met at least three of the four conditions, and
- 92.3% of the students met at least two of the four conditions.

Overall, although the 75% benchmark was not met, only four student did not meet the conditions for three of the four areas, and no student missed all four areas. These basic skills for MATH 21B are utilized throughout the course and are pre-requisite skills for the other SLOs in which the benchmarks were met. With this in mind, a review of the criteria for success and/or the final exam questions should be undertaken.

SLO 3
Use fundamental properties to solve equations.

#27, #28, #29, #30

Criteria for success: A student satisfies this SLO is three of the four questions are solved correctly with minor error(s). Student must show appropriate work neatly and orderly.

Benchmark: 75% of the students will satisfy this SLO.

Assessment Results: 98.1% of the students met this SLO. Therefore, the benchmark for this SLO was met. Basic equation solving is introduced early giving students the opportunity to practice equation solving techniques throughout the course. Another example of “perfect practice makes perfect.”
SLO 4
Use algebraic techniques to analyze and solve applied problems.

#23, #24, #25

Criteria for success: A student satisfies this SLO if two of the three questions are solved correctly with minor error(s). Student must show appropriate work neatly and orderly. The solution must indicate a variable and what it represents, an equation to solve, a step-by-step solution of the equation, and the answer written in a complete sentence in the context of the applied problem including the appropriate units.

Benchmark: 75% of the students will satisfy this SLO.

Assessment Results: 75% of the students met this SLO. Therefore, the benchmark for this SLO was met. Solving applied problems is challenging for many math students. Although the benchmark for this SLO was met, instructors should continue to explore teaching strategies to help students in this area.

SLO 5
Apply mathematical formulas to determine measurements in geometric figures.

#20, #21, #26

Criteria for success: A student satisfies this SLO if two of the three questions are solved correctly with minor error(s). Student must show appropriate work neatly and orderly.

Benchmark: 75% of the students will satisfy this SLO.

Assessment Results: 96.2% of the students met this SLO. Therefore, the benchmark for this SLO was met.

SLO 6
Apply concepts and principles of percents to solve applied problems.

#23, #25

Criteria for success: A student satisfies this SLO if one of the two questions are solved correctly with minor error(s). Student must show appropriate work neatly and orderly. The solution must indicate a variable and what it represents, an equation to solve, a step-by-step
solution of the equation, and the answer written in a complete sentence in the context of the applied problem including the appropriate units.

Benchmark: 75% of the students will satisfy this SLO.

Assessment Results: 88.5% of the students met this SLO. Therefore, the benchmark for this SLO was met.
eCafe Discipline Questions used in 2014 & prior

1. The instructor clearly explains course procedures (attendance, assignments, exams, etc.).
2. The instructor uses class time well.
3. The instructor is well-prepared and organized for class.
4. The instructor is available for help outside of class.
5. The instructor clearly explains the goals, objectives, and overall purpose of the course.
6. The instructor speaks clearly and is easy to understand.
7. The instructor answers questions clearly.
8. The instructor makes good use of examples in class.
9. The instructor appears to know his or her subject.
10. The instructor effectively uses the blackboard, films, pictures, computers, slides, or other aids.
11. The instructor clearly explains complex ideas.
12. The instructor allows time for questions and encourages them.
13. The instructor emphasizes important points.
14. The instructor asks questions to see if students understand.
15. The instructor treats all students fairly.
16. The instructor is interested in the subject matter.
17. The instructor is genuinely interested in students.
18. The instructor is willing to help with individual problems.
19. The instructor grades tests fairly.
20. The instructor clearly explains what is expected of students.
21. The instructor clearly explains the grading system.
22. Overall, the instructor is a very good teacher.
23. The instructor returns exams and assignments promptly.
24. The instructor treated students with respect.
25. How did the instructor show concern for students?
26. What else would you like to say about this instructor?
27. Would you recommend this instructor to other students? Why or why not?
28. Other comments: