

Leeward Community College

Whole Number Skills

1. Course Alpha

MATH

2. Course Number

9

3. Number of Credits

1

4. Effective Term

Fall 2011

5. Course Title

Whole Number Skills

6. Catalog Title

Whole Number Skills

7. Prerequisites

None

8. Corequisites

MATH 16: Math Study Skills

9. Recommended preparation

None

10. Catalog Description

Math 9 covers arithmetical operations with whole numbers, and introduces the concepts of fractions, decimals, and percent. Estimation and associated applications will also be included.

11. What are the general student learning outcomes? (What knowledge and/or skills will successful completion develop in the students?)

Course SLO
Choose appropriate mathematical operations and apply them to whole numbers.
Identify place values in whole numbers and decimals.
Compare and graph positive rational numbers.
Select and utilize precise mathematical language and symbols to effectively communicate procedures and results.

12. Course Content

What evidence exists that the course content is appropriate, relevant, and covered in sufficient depth? (addresses breadth, depth, relevancy) What evidence exists that the course reflects current theory and practice in the content area? (addresses currency)

These topics are a subset of the topics currently covered in Leeward Community College's existing MATH 1B course. They provide thorough coverage of the content identified by the discipline to be the topics necessary for success in MATH 18 or MATH 22 which are the two courses that will use MATH 9 as a prerequisite.

When offered as a redesigned course, the anticipated course procedures will follow contemporary principles of course redesign as appropriated by national organizations. Student learning will be supported by current mathematical education software that has been vetted by many colleges nation-wide and whose contemporary successes have been widely documented.

Content
Operations on whole numbers
Utilize the order of operations agreement to simplify expressions involving parentheses and multiple operations
Estimate sums, differences, products, and/or quotients involving whole numbers
Form equivalent fractions, decimals, and percents
Compare and order fractions and decimals
Solve basic application problems.

13. How is this course related to the educational needs and goals of the division, college, and community as reflected in the Strategic Plan? How is it related to courses and programs in other disciplines?

This course will comprise one part of the redesigned developmental math sequence which will improve success rates and reduce time needed to reach transfer level math courses. As a one-credit course, it offers flexibility in scheduling and focuses on the necessary skills for math courses later in the sequence. As such, Math 9 addresses the following:

Strategic Outcome II.2.B of the Leeward Community College 2008-2015 Strategic Plan Update: Modify the traditional structure and delivery of programs to accommodate the full-time employed adult student and that shortens student time to degree.

Outcome 1.3 (and 2.3) of the System Strategic Plan: Increase the number and percent of (Native Hawaiian) students enrolled in developmental intervention that successfully complete at least one course in the developmental sequence within their first academic year thus making progress towards degree applicable instruction.

Outcome 1.4 (and 2.3) of the System Strategic Plan: Increase by 3% (6-9%) per year the number of

(Native Hawaiian) students who successfully progress and graduate, or transfer to baccalaureate institutions, while maintaining the percentage of transfers who achieve a first year GPA of 2.0 or higher at the transfer institution.

- 14. For what program was the course designed? Is it an approved program? Will the course be required or elective? Will the course lengthen the time for the students to complete the program? Will it replace another course?**

MATH 9 is not designed for any specific program, however it will replace MATH 1B in the sequence of remedial/developmental mathematics courses.

MATH 9 will not lengthen the time needed for any student to complete a degree since it will take the same as, or less than, the amount of time needed to complete MATH 1B.

- 15. How many hours will the students spend per week in lectures, laboratories, seminars, or other supervised instruction?**

MATH 9 could be offered either as a lecture course or as a redesigned lab-style course. In either case, students would spend the equivalent of 1 hour per week in class or supervised computer lab. For example, MATH 9 could be scheduled to meet for one hour per week for the entire semester, or for 3 hours per week for five weeks.

- 16. What independent work will be required of students? (Reading, research, writing, special projects, etc.) For written or other special projects, identify the usual number and length of projects. For readings, where the entire book or pamphlet is not used, indicate the portion of the material to be used.**

MATH 9 could be offered as a lecture or as a lab-style course.

As a lecture class, students will be expected to complete textbook and/or computerized homework and prepare and submit other assignments, which could include quizzes or written reports with typical lengths of one to five pages.

As a lab-style course, students will be expected to spend a total of 30-35 hours working through the instructional software in unsupervised settings (typically at home).

- 17. What experiential or professional preparation is required to teach this course? Do we have a full-time faculty member who meets these requirements? If not, who will teach the course?**

There are no specialized preparations beyond meeting the minimum qualifications for an instructor in developmental mathematics. By University of Hawaii Community College system-wide agreement of academic Deans, the current minimum qualification required is any one of the following:

- Master's degree in mathematics
- Master's degree in education with a bachelor's degree in mathematics
- Master's degree in math education

All full-time mathematics discipline faculty members are able to teach this course.

- 18. Is a similar course taught at any other community college? Any other UH college? If so, provide information about the course identification and content of similar courses. If this course differs in important ways from existing similar courses, explain how.**

MATH 9 is similar to PCM 21: Whole Number Skills, offered at Kapiolani CC. The PCM 21 learning outcomes are:

- Read and write whole numbers using place value
- Round whole numbers
- Find appropriate solutions for problems involving operations (addition, subtraction, multiplication, and division) with whole numbers
- Use appropriate mathematical vocabulary
- Identify prime and composite numbers, find the prime factorizations of a whole number.

The 3-credit basic mathematics courses at the other community colleges cover a broader range of topics than this proposed 1-credit MATH 9.

- 19. If this course is comparable to a course taught on a four-year campus, and is intended to count in lieu of that course, the proposal must contain evidence of up-to-date information as to the content and objectives of the course on the four-year campus. (This information may be obtained through discussion with faculty teaching the course on the four-year campus or by obtaining a copy of the course syllabus or outline.)**

N/A

- 20. If the course is appropriate for articulation with the UH Manoa general education core or with any other department or college requirements on a UH four-year campus, provide a brief rationale.**

N/A

21. Methods of instruction

- Class Discussion
- Computer Activities
- Demonstrations
- Group discussions
- Internet enhancement
- Lab
- Lectures
- Problem-based learning
- Tutors

Instructors normally use a combination of these methods to maximize effectiveness of instruction. Faculty members teaching the course engage in constant dialogue among themselves as well as their colleagues from the other campuses to discuss teaching techniques and strategies. They also attempt to maintain currency through their participation in conferences sponsored by professional organizations like the Pacific Island Mathematical Association of Two-Year Colleges and the Hawaii Council for Teachers of Mathematics.

22. Methods of Evaluation

- Attendance
- Exam
- Others
- Take home assignments

Method of Evaluation
Attendance
Exam
Others
Take home assignments

23. Is Textbook Required

If offered as a lecture course, a textbook chosen by the instructor will be required.

24. Exclude from Catalog

NO

25. Justify the level of proposed course:

What evidence exists that the course appropriately covers areas with sufficient emphasis for a remedial, a developmental, or a college-level course? (addresses rigor)

MATH 9 covers the portion of the material in Leeward CC's MATH 1B that is necessary for success in MATH 18 or MATH 22. The material will be covered in the same depth as is currently covered in MATH 1B; however, this material represents approximately one-third of the content in MATH 1B.

26. Will this course require additional staff, equipment, facilities, or other cost items? If so, are they available? Are they included in the budget, or will they be covered by reallocation?

No, sections of MATH 9 will replace sections that would have previously been assigned as MATH 1B.

27. Expectations for Student Participation. Students are expected to spend at least two hours outside of class for every hour in class by means of the following activities:

- Computer Projects
- Documented Practice Time
- Homework Assignments
- Practice Lab Time

28. What change is proposed in the course? (Provide specific information on both the new and the old course.)

NA

29. What is the rationale for the change?

NA

30. Is the change substantive enough to require a change in course identification? If so, explain in detail.

NA

31. Is the course currently articulated with any four-year program? If so, give details and dates of agreement(s) and explain any impact the proposed change may have upon articulation.

No, MATH 9 is not and will not be articulated with any four-year program.

32. Will the change require additional staff, equipment, facilities or other resources? If so, provide details and indicate whether they are available.

No, sections of MATH 9 will replace sections that would have previously been assigned as MATH 1B.

33. Will this change increase or decrease the number of required hours for attainment of a certificate or a degree? If so, provide details and justification.

No, MATH 9 will replace MATH 1B in the sequence of remedial/developmental mathematics courses. MATH 9 will not lengthen the time needed for any student to complete a certificate or degree since it will take the same as, or less than, the amount of time needed to complete MATH 1B.

34. Distance Education

- a) what methods will be employed to ensure timely and effective interaction between faculty and students and student to student?
- b) What technological skills will students need to succeed in this course?
- c) How will the instructor execute and ensure the rigor and breadth of the course through electronic delivery?

Though not strictly a distance course, there are many aspects of the redesigned model that are similar to a distance course.

Students will be required to attend on-campus class sessions that will allow students to meet with the instructor, acclimate themselves with the learning software, get tutoring, and be assisted through the course procedures. E-mail, Lualaba, and messaging systems built into the required software programs will be utilized extensively to ensure timely and effective communication between faculty and students.

No specialized skills beyond e-mail and internet access and familiarity with these is needed in order to succeed in this course. The required software program has tutorials that guide students through entering answers, graphing, and other specialized technological operations.

Rigor and breadth are executed by carefully selecting software packages and topics covered, and by requiring proctored testing.

35. Distance Education

What type of academic support and technology training will be required to ensure pedagogical development of the instructor for this course?

Faculty training and practice in the selected program is ongoing throughout the development of the course. Training sessions will be scheduled for support staff, tutors, and new faculty who are expected to teach this course.

36. Distance Education

How will specific technology be integrated into the course, and how will its use be appropriate to

How will specific technology be integrated into the course, and how will its use be appropriate to the nature and objectives of the course?

The portions of the course that follow the redesign model rely primarily on a publisher-developed and supported software platform for learning, assessment, and reporting. The appropriateness and success of the programs that were considered have been documented at the national level.

37. Course Curricular Function: (Please explain the function of this course as it relates to the College Mission and the achievement of relevant degree and certificate program requirements.)

MATH 9 relates to the "Learning and Teaching" statements in the Leeward CC Mission: To specialize in the effective teaching of remedial/developmental education, general education, and other introductory liberal arts, pre-professional, and selected baccalaureate courses and programs, with the goal of seamless system articulation and transfer, where appropriate. To structure our programs in such a way that they reflect not only academic rigor but also student development, learning outcomes and student goals.

MATH 9 is not designed for a specific program or certificate but will replace MATH 1B in the remedial/developmental mathematics sequence.

38. What evidence exists that the course is taught so that skills are built on what has been learned earlier in the course (or in a previous course) and will lead to what will be learned in a future course?

The mathematics discipline has carefully planned the content of this course to meet the needs of the subsequent courses in the sequence (MATH 18 and MATH 22). This choice was the result of a discipline-wide review of all of the developmental mathematics course syllabi as well as careful consideration of the content expectations of courses system-wide that serve the same curricular function as a prerequisite to pre-algebra.

39. Comments

The Math and Sciences Division vote was 24 for, 0 against, and 0 abstain.

40. Justify the need/demand for the proposed course. (Attach documentation, e.g., surveys, reports, advisory committee recommendations, etc.)

Currently students who score below 21 on the COMPASS pre-algebra domain must take 10 to 12 credits of mathematics courses over at least a year before possibly entering into a college transfer math course. MATH 9 is a one-credit alternative which students could complete in less than a semester and transfer to MATH 18 within the same semester. It would provide essential math skills in less time and for less cost. MATH 9 would replace MATH 1B in the sequence of remedial/developmental mathematics courses, and MATH 1B has consistently been offered every semester.

41. If the course is renumbered to be 100 or above, how does it meet the criteria for Transfer Courses, Attachment III? An analysis as to how those criteria are met should be provided.

N/A