Fast Track
General Education Foundations Course Articulation
From a UH Campus to UH Manoa: INSTRUCTIONS

MATHEMATICS

The University of Hawai‘i Mathematics Faculty Working Group invites your campus to propose that one or more of your courses articulate to UHM as satisfying the UHM Foundations Symbolic Reasoning (FS) requirement. If the Working Group recommends and the University Council on Articulation (UCA) approves the proposal, students who complete any section of the course in Fall 2003-Summer 2007 with a “D” grade or better will satisfy UHM’s FS requirement if they later transfer to UHM.

This is a one-time, “fast track” process described in the memo that Deane Neubauer, Interim Vice President for Academic Affairs, distributed to all Chancellors on December 24, 2002. As explained in that memo, permanent articulation procedures are to be developed.

If your campus offers a course that is equivalent to a UHM-approved FS course and if you are interested in articulating it as a FS course, please complete a proposal and submit it to the UCA Chair by February 5, 2003. The Working Group will review your proposal and make its recommendation to the UCA on February 15. The Vice President for Academic Affairs will inform you of the decision by March 3, 2003.

Instructions to propose a course

All proposals must be submitted electronically to vpaa-gened@hawaii.edu by 4:00 p.m., Wednesday, February 5, 2003.

Electronically (MS Word or Adobe Acrobat format) submit the following to vpaa-gened@hawaii.edu:

(A) Completed proposal form (signatures not required on electronic submission) and complete answers to the questions to show how the course meets each of the Hallmarks. The form is available online at www.hawaii.edu/gened/vpaa_articulation.htm.

(B) A master syllabus. (If multiple instructors teach the course and use varying texts and/or assignments, include at least three representative syllabi.)

DEADLINE: 4:00 p.m., Wednesday, February 5, 2003.

After electronically submitting, mail a copy of completed form with appropriate original signatures, supporting materials, and master syllabus to

Dr. Karl Kim, Chair, University Council on Articulation
University of Hawai‘i at Mānoa
2444 Dole St., Bachman Hall 105
Honolulu, HI 96822-2397
Fast Track  
General Education Foundations Course Articulation  
From a UH Campus to UH Mānoa: PROPOSAL FORM, MATHEMATICS

Course Information

Course: Math 100  
Submitting Campus: Kapi'olani Community College

Title & Catalog Description:  
MATH 100 Survey of Mathematics is a survey of important elementary concepts in algebra, logical structure, numeration systems, and probability, designed to acquaint non-specialists with examples of mathematical reasoning, and to develop an appreciation and understanding of their historical development and of the relationship of mathematics to the modern world.

UHM Equivalent Course (check one): [Only equivalent courses may be submitted for Fast Track review.]

X MATH 100 Survey of Mathematics

Symbolic Reasoning (FS) Hallmarks & Application Questions

Answer the following questions and submit the answers along with this form and at least one course syllabus.

1. Students will be exposed to the beauty, power, clarity and precision of formal systems. How will the course meet this hallmark? Mathematics, except for perhaps numerical computation drill, is beautiful. Clarity and precision is inherent in the nature of mathematics. This hallmark will be met by any mathematics course.

2. Instructors will help students understand the concept of proof as a chain of inferences. How will instructors help students understand this concept? Introduction of basic skills in symbolic logic may be a good idea before embarking on proof of mathematical theorems. KapCC's Math 100 teaches the basic concepts of symbolic logic at the beginning of the Logic section of the course. However, most of the proofs involved in Math 100 are comparatively simple and easily manageable for our students, as long as students have a basic knowledge of elementary mathematics and reasonable intelligence.

3. Instructors will teach students how to apply formal rules or algorithms. How will instructors meet this hallmark? At the Math 100 level, requiring students to utilize the memory and recall keys of basic scientific calculators may be an opportunity to expose students to the concept of algorithms. Also solving problems using AND-gate, OR-gate, and NEGATION-gate are treated in the introduction of symbolic logic. Asking students to write a simple computer program is an ideal tool to teach algorithms. In KapCC's Math 100, an introduction to computers is optional.

4. Students will be required to use appropriate symbolic techniques in the context of problem solving, and in the presentation and critical evaluation of evidence. What symbolic techniques will be required and in what contexts? How will presentations and evaluations of evidence be incorporated into the course? Symbolic interpretation of any mathematical problem is the essence of mathematics. Without utilizing symbols, it is impossible to do mathematics. Even for a very simple and obvious problem on the Math 100 level, symbolic representation of the problem and getting the solution utilizing algebraic or analytical rules are basic activities of the course. Students are also required to write solutions in everyday language by appropriate interpretation of symbols.
5. The course will not focus solely on computational skills. *What reasoning skills will be taught in the course?* Inductive and deductive reasoning skills.

6. Instructors will build a bridge from theory to practice and show students how to traverse this bridge. *How will instructors help students make connections between theory and practice?* The course intends to make students realize the power of utilizing formulas which are carefully derived by applying basic algebraic and analytical rules. For example, to find the balance after 10 years of a principal compounded for ten years at a certain annual percentage rate, students are asked to compute each year's balance and add those ten balances. After that the instructor derives the formula for the future balance and asks students to compute the future value utilizing the derived formula. Similarly, a formula for annuity is derived utilizing the sum of a geometric series. Another example may be that normal distributions (which are simpler to work with than binomial distributions) can be used to calculate probabilities of events that occur in binomial distributions, so long as the number of independent experiments exceed thirty.

**Required Signatures**

Requested by Charles Matsuda, Chair Math/Science Department

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<th>Signature</th>
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Approved by Chief Academic Officer Campus

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Submit to vpaa-gened@hawaii.edu by 4:00 p.m., February 5, 2003.
COURSE: Math 100 - 31985, 31986 Survey of Mathematics (3 Cr) Spring 03

3 hour per week: MWF 8:00 - 8:50 at OLAP 214, 9:00 - 9:50 at OLAPA 214.

PREREQUISITE: Satisfactory completion of Math 25 or equivalent.

INSTRUCTOR:
OFFICE: Kalia 206 Phone: 734 - 9415 (leave recorded message if nobody answers)
OFFICE HOURS: MWF 10:00 - 10:50, TTh 10:30 - 11:20

TEXT BOOK: The Nature of Mathematics (9th edition) by Karl J. Smith

COURSE OBJECTIVE: This course is designed for the students to gain awareness and appreciation of various topics in mathematics so that upon the completion of this course the students are able to apply some of the mathematical skills (listed next page) in their everyday life.

EXTRA HELP: It may not be easy to find qualified tutors at this level. Most likely you have to rely on your own effort to assimilate the material. Utilize instructor's office hours also.

HOME WORK: Homework will be collected and graded. You may collaborate with your classmate or get assistance from any source to complete homework. You are not allowed to take chapter exam if you do not submit your completed homework. To receive credit for homework:

You must earn more than 40% in chapter exam. If your chapter exam score is 40% or lower, then your homework will not get any credit.
All homework problems must be completed. Incomplete homework will not be graded. Incomplete homework disqualifies to take the chapter exam.
Problems must be numbered, worked neatly and legibly with all work shown.
Sloppy homework will not be graded. Have enough space between problems.
Graph papers should be used for problems involving graphing.

A 5 - 10 minute quiz will be given at the beginning of each class session to monitor students' progress. This also checks students' attendance on time.

EXAMS: There will be 4 unit exams and a comprehensive final. To arrange an exam make-up, the student should notify the instructor prior to the return of the exam. Any exam not taken will be counted as zero. All exams taken late will be penalized.

GRADES: All the scores you acquire during the semester including the final will be added at the end of the semester and the average will be computed by your total score accumulated divided by the semester total. Usually the semester total is about 1,000 points and your grades will be based on the following:
<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
<th>Minimum%</th>
<th>Maximum%</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit Exams</td>
<td>4x100</td>
<td>90%</td>
<td>100%</td>
<td>A</td>
</tr>
<tr>
<td>Homework/Quiz</td>
<td>300</td>
<td>80%</td>
<td>89%</td>
<td>B</td>
</tr>
<tr>
<td>Final Exam</td>
<td>300</td>
<td>70%</td>
<td>79%</td>
<td>C</td>
</tr>
<tr>
<td>Total</td>
<td>About 1,000</td>
<td>60%</td>
<td>69%</td>
<td>D</td>
</tr>
<tr>
<td></td>
<td>Below 60%</td>
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<td></td>
<td>F</td>
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Note: Any student who "disappears" without officially withdrawing (you complete the procedure paying $5.00?) will receive an F.
The final examination will include a portion which tests your achievement of a mandatory minimum standard for this course. FAILURE TO ATTAIN A SATISFACTORY SCORE ON THIS PORTION OF THE FINAL EXAMINATION WILL AUTOMATICALLY RESULT IN A FAILING GRADE FOR THE COURSE, which supersedes any other grading procedures stated in this syllabus. On the other hand, if your score meets or exceeds this cutoff score, you will not automatically pass, but could receive any grade from A to F, according to the grading procedures outlined elsewhere in this syllabus.

The Math/Science Department policy on Withdrawals from courses and Incomplete grades is as follows:

1. Withdrawals (W grade) - After the "last day for all withdrawals," which is found on the calendar in the schedule of courses, the instructor will sign withdrawals only in cases of extreme or unusual circumstances. Grade related excuses are unacceptable. Examples of extreme or unusual circumstances are:
   a) a certified medical reason.
   b) a death in the immediate family.

2 Incomplete (I grade) - students must present the "request for Incomplete" form prior to the last day of instruction. "I" grades will be given only to students who are achieving passing grades and are very close to completing the course. In addition, the student must have a very good reason for not being able to complete all the work on time. Examples of good reasons are the same as those listed under the withdrawal policy above.

The Mathematics Department policy on Prerequisite Checking is as follows:

Students who enroll in a mathematics class must have satisfied the prerequisite for that class. The prerequisite is a grade of "C" or better in the prerequisite course or a sufficient placement test score from within the last two years. Transfer students who have satisfied this prerequisite elsewhere will be required to provide one of the following forms of documentation for approval:
   a) a report card or transcript from another UH campus.
   b) a placement test result from another UH campus.
   c) a college transcript, accompanied by a catalog course description, from outside the UH system.

Carry these documents with you during the first two weeks of classes. Documents from within the UH system must be shown to the Mathematics Coordinator for approval. Students who have not satisfied the prerequisite or who fail to provide the necessary documents will not be allowed to remain enrolled in the class.

INSTRUCTOR ABSENCE:
If on a regular class day the instructor does not arrive within fifteen (15) minutes of the scheduled starting time, students are dismissed. Normally, if the instructor is absent, a message will be sent to the class. However, make-up classes are hard to arrange and you should keep up with the assignment schedule.
1. Kapiolani Community College is an Equal Opportunity/Affirmative Action Institution.

2. If you have a disability and have not voluntarily disclosed the nature of your disability and the support you need, you are invited to contact the Special Student Service Office, 734-9552 (V/TTY), Ilima 105, for assistance.
Math 100 class schedule        Spring 03
The following is the instructor's intended teaching schedule. Therefore, it could be revised according to the class needs.

Consumer Mathematics
1. Simple and compounded interest            Jan 13
2. Effective yield rate per year                 Jan 15
3. Annuity                                               Jan 15
4. Monthly installment payment                 Jan 17
5. Add - On interest method and its APR       Jan 22
6. One month interest computation on open end credit     Jan 24
7. Maximum house payment and down payment                Jan 24
8. 5% offer and 10 % offer and Amortization          Jan 27
9. Review                                                            Jan 29
10. Unit exam on consumer mathematics                Feb 3

Probability
11. Definition of probability, and odds      Feb 5
12. Conditional probability                 Feb 7
13. Discussion of "or" and "and"            Feb 10
14. Expected value (expectation           Feb 14
15. Counting techniques                    Feb 19
16. Permutation and combination            Feb 24
17. Probability distributions              Feb 26
18. Review                                      March 3
19. Unit exam on probability                 March 5

Statistics
20. Frequency distributions                   March 7
21. Measures of central tendency - mean, mode, median     March 10
22. Measures of dispersion - mean absolute deviation, range, variance, standard deviation March 12
23. Some examples of probability distributions March 14, 17, 19, 21
24. Review                                      April 2
25. Unit exam on statistics                   April 4

Logic
26. Set                                      April 7
27. Inductive and deductive reasoning, disjunction, conjunction, negation April 9
28. Conditional statement, biconditional statement    April 11
29. Tautology, Implication, Equivalence April 14
30. p unless q, no p is q, either p or q, DeMorgans    April 16
31. Direct, indirect, transitive reasoning         April 21
32. Examples of valid deductive reasoning April 23, 25, 28
33. Review                                      April 30
34. Unit exam on logic                         May 2
35. Final Exam   8:00 am class (31985) May 14 (Wednesday) 7:45 - 9:45 am
                   9:00 am class (31986) May 12 (Monday) 7:45 - 9:45 am