

# **UH Manoa Foundation Board Annual Report for 2008-2009**

## **Henri Casanova, Chair, UHM Foundations Board**

### **1. Policies**

The main task of the Foundation Board (hereafter, FB) this year, besides its routine duties, was to investigate and propose solutions for the problem of FS compliance, as requested by a 11/26/2008 memo from the GEC Chair. The problem is that a large percentage of our students (> 40%) do not comply with the FS requirement by the end of their freshman year. This is possible because in spite of the "intent" of the Foundation requirement, this requirement is not enforced. The FB has investigated this problem by gathering feedback from advising units, by talking to their departments and colleagues, and by gathering enrollment data. The main reasons for the problems are: (i) unprepared students and (ii) misalignment with major requirements. Addressing (i) is of course difficult, and one envisioned solution is to reduce section sizes (although this of course raises budgetary concerns). Addressing both (i) and (ii) could be solved, at least as a temporary solution, by making the FS compliance a "by the end of the second year" requirement. Appendix 1 at the end of this report contains a full copy of the answer of the FB to the GEC.

### **2. Designation Removal**

The FB did not receive any request for and did not enforce any designation renewals.

### **3. New Course Proposals**

The FB received only one request for a new designation: an FW designation for English 190 ("Composition I for Transfer Students to UHM"). The objective of this course is to provide transfer students with an appropriate FW course that matches their experience levels, rather than placing them in the freshman course English 100. The FB agreed to examine this course informally and early on to help streamline and speed up the process, and eventually voted to formally grant the FW designation.

### **4. Five-Year Designation Renewals**

The FB did not receive any request for designation renewals.

### **5. Multi-Campus Foundation Board**

The Multi-Campus Foundation Board teleconference, with representatives from UHM, Kauai CC, MCC, and WCC, is scheduled on 04/27/09. Given that this report is due on 4/16/09, it cannot provide content on what happened during the teleconference. The FB Chair will communicate relevant information from that teleconference to the GEC directly.

### **6. Ongoing Concerns and Issues**

Late in the semester, while the FB had been tasked with exploring the issue of FS compliance within the first year (see Section 1), at a useful joint meeting with the GEC, the issue of FG was brought up. While as far as the FB knew the issue of FG compliance was to be explored in Fall 2009, it seemed strategically better for the GEC to address both issues as once. The FB has started exploring the FG compliance issue, but at the time this report is being written it is not possible to report on progress. The FB Chair will communicate findings directly to the GEC by the end of the semester.

Last year, in his final report, Chair Stephen Canham expressed his concern regarding the position of FB Chair. He advocated for a 2-year term, rather than a 1-year term, as chair given that the learning curve is steep. He also

indicated that a 2-year term should be accompanied by a course release (noting that there was a proposal for a course release for a 1-year term, but that this proposal had never been approved by the administration.) This year again the same pattern was repeated, with myself selected as Chair in spite of my term on the FB ending this semester. This year it seems that members were either in their 1st year or in their 3rd year on the FB, which did not make it possible to pick a chair that would have some experience and that would stay on for 2 years. Part of the problem is that designating the FB Chair is a very ad-hoc process without much incentive to be chair. Next year the chair selection should be easier given that many board members will be starting their 2nd year on the board, but nevertheless exploring the notion of a course release for a 2-year term as chair is clearly worthwhile.

## Appendix 1: Foundation Board's Answer to GEC Regarding FS compliance

Feb. 13, 2009

To: GEC  
From: Foundation Board  
Subject: FS and First-Year Foundations Requirements

The Foundation Board has discussed the memo sent by the GEC Chair and has gathered data and/or feedback to try to understand the issues with FS requirement compliance. We first include thoughts in response to the questions raised in the original memo from the GEC, and then venture some thoughts in answer to key problems.

1. Are class size and/or seat availability related to student non-compliance? Math 100, for example, is often offered in sections of 300+ students. Seat availability in other FS courses is limited, and perhaps less than demand. Overall, however, data suggest that the number of first-year students doesn't seem to exceed the total number of available seats.

We have also gathered some data regarding enrollment in FS courses. The percentages of freshmen in those courses, averaged over Fall 08 and Spring 09 is only slightly over 30%, noting that it is the highest in MATH 100 at 46%. Only around 54% of Freshmen seem to fulfill the FS requirement by the end of their first year (based on data for two cohorts).

The problem with such data is that while it denotes that there is a problem, it fails to help us understand why students are not enrolling (e.g., we do not know how many students tried to enroll but could not based on seat limitations). The only way to ascertain the situation would be to have a survey among students asking questions such as: "In your UHM experience, have you tried to enroll in a class in the goal of satisfying your FS requirement but couldn't due to lack of available seats?"

Based on our interactions with our different departments, the consensus seems to be that the answer to the question is most likely "no", meaning that non-compliance is not primarily caused by class size and/or seat availability. As an example, here is some input we gathered from a Philosophy faculty teaching PHIL 110 and PHIL 111: "The 100 seat sections of PHIL 110 and PHIL 111 have not filled completely in past two years. Even before I caution the class about the need to keep up with assigned exercises and fatal consequences of not doing so, I have a few empty seats, and once I issue the warning there is flow in and out which leaves a few more empty seats. Enrollment this semester has dwindled to a current 54. "

2. How many of the science departments across colleges/schools advise their students to sequence calculus among the other science courses? Are some units advising students to delay calculus because of their heavy first-year requirements? Is the fact that calculus is not a prerequisite to many science courses detrimental to compliance? If a pre-calculus or calculus FS course were required during the first year, would many first-year science students fail it or other courses?

The fact that calculus is not a prerequisite for many science courses is of course detrimental to compliance, but it is not clear that making it a prerequisite is necessarily a good idea. For instance, for Biology students it may be the case that such a requirement would be more of an impediment to a major that has already many requirements. In several cases, part of the feedback we received from advising units indicates that taking a course such as calculus by the end of the first year would result in too heavy a load in the subsequent years, while relaxing the requirement to later years could be more manageable. And yes, the general feeling is that many first-year science students would be very unprepared and likely to fail such a course.

3. How do the Manoa Advising Center and college/school/department advising offices advise students to meet the FS requirement? Can they do more to compel compliance with the first-year requirement?

We have gathered feedback from some advising units on campus, namely, CTAHR, SOEST, PAC, MAC, and the Shidler College of Business. We found that advising approaches vary across the board, as might have been expected, with some units coming close to enforcing the requirements (at least for some majors), and others taking a much more flexible approach:

- The College of Tropical Agriculture and Human Resources (CTAHR) that has established a "Pre-Req Check" process by which students end up satisfying the FS requirement early. However, this applies for BE and PEB majors as courses in these majors have FS courses as prerequisites. For other students in other CTAHR majors, CTAHR advisers do not stress the "by the end of the first year" FS requirement.
- School of Ocean and Earth Science and Technology (SOEST) advisors place a large emphasis on students fulfilling FS requirements as soon as possible. This is because most of SOEST's programs require math as a pre-requisite for many courses.

- A&S also highly recommends that students complete the FS requirement in their first year, but such compliance is not enforced in those majors where it conflicts with major requirements, student course load, and/or abilities.
- The Manoa Advising Center (MAC), who deals with first year, undeclared, and transfer students, recommend that a student take the math placement exam if the plan is to pursue a major that requires a higher level of math. Students who have decided a major are advised to fulfill the FS requirement by the end of the first year. However, undecided students are not advised to take a FS course during their first year (they are advised to take that course once they've decided on a major.)
- The Pre-Health & Law Advising Center (PAC), although it advises students to take the Math placement exam as early as possible, does not tell students that they must complete the FS requirement by the end of the first year. This may be imputed to the heavy science course load of these students.
- As far as the Shidler College of Business students are concerned, it is important to note that students do not apply for the college until their Junior year. Students, therefore, just need to take the FS course before applying and are not told that they must fulfill the FS requirement during their first year.

It seems that some advising units could do more to ensure compliance, but we have to bear in mind that they strive to do what they really feel is in the best interest of the students. In other words, they are very aware of the intent of the requirement, but choose to be flexible about it because it makes more sense for many students and for many majors. Note that part of the feedback showed, as expected, that many incoming students are very nervous about the FS requirements and feel that they will likely not pass the course, hence the (likely sensible) advice to delay. (See our discussion of “unprepared students” at the end of this document.)

The broader observation is that for some majors, the FS requirement seems to fit naturally with the major's requirements (e.g., Physical Sciences), making advising regarding the FS requirement subsumed in general advising. (See a broader discussion of this crucial point at the end of this document.)

4. Should student placement into Calculus I during the first year be considered as satisfaction of the FS requirement (perhaps without credit)? Would it make a difference if a student then delays taking Calculus until the second year? What if they don't end up taking Calculus until they are seniors? What if they never take Calculus?

Placement into Calculus I is not sufficient to satisfy the FS requirement as the content of the test is well below the FS Hallmarks. A better test could be put in place (satisfy without credit), and it seems that at least some departments would be in favor of this option. One could think of creating a test using the GRE as a source of inspiration. Creating a new test comes with challenges: the test should satisfy the hallmarks; one would need to estimate how many students would take it per year; a process would need to be put in place to generate and approve the test; a process would need to be in place to decide who grades the test; etc. This seems like a possibility, which requires substantial work, thought, and budget. The problem here is that it is not clear that this test would solve the compliance problem. If students are unprepared to take the courses, it's not clear how they could be prepared to take the test.

5. Should GE policy be changed to have FS courses be taken before the end of sophomore year rather than the first year? (Here's a related issue: Calculus I courses are 200-level courses, and are therefore “second-year courses in a sequence or development in a field of study” [Catalog p. 360]. Should 200-level courses be designated as Foundations courses?)

Our guess is that the faculty would be divided about allowing 2<sup>nd</sup> year students to in FS courses. For instance, the philosophy faculty has actually expressed that delaying “foundations” seems inherently wrong, and that the current situation is just a compromise so that the lack of preparedness of our incoming students does not affect enrollment numbers. Some advising units have expressed the fact that pushing the requirement to the end of the 2<sup>nd</sup> year would make more sense given the heavy requirements of some majors. It is true that the fact that we have 200-level FS courses suggests that FS compliance by the end of the 2<sup>nd</sup> year is part of the design of our system. On the other hand, the very concept of “foundations” seems to imply a 1<sup>st</sup> year experience. Making this allowance will likely not have much impact on the current situation, i.e., in terms of which students take which courses when. Of course, it would increase the percentage of students that comply the requirement “in time” in our books.

## PROBLEMS AND SUGGESTIONS

### **A. Unclear FS requirement description**

The original memo from the GEC indicates that the purpose of the FS requirement may not be sufficiently clear for students to grasp. One way to address this is to modify the wording of the FS requirement description to make it more compelling to students and

provide them with a rationale that they can follow. We do not know whether this is actually possible. Indeed, the language in the catalog originates from a Senate resolution, and the language in the catalog led to the specific hallmarks. So, it may not be possible to modify the language at all as it should remain as close to that of the Senate resolution as possible. But in case it can be done, the Board, based on input from the Philosophy Department, has worked on an improved version of the requirement description.

**Symbolic Reasoning (FS): 3 credits [current]**

Symbolic Reasoning courses expose students to the beauty and power- of formal systems, as well as to their clarity" and precision; courses will not focus solely on computational skills. Students learn the concept of proof as a chain of inferences. They learn to apply formal rules or algorithms; engage in hypothetical reasoning; and traverse a bridge between theory and practice. In addition, students develop the ability to use appropriate symbolic techniques in the context of problem solving and to present and critically evaluate evidence.

**Symbolic Reasoning (FS): 3 credits [proposed]**

All academic subjects make use, directly or indirectly, of symbolic representations to solve real-world problems by drawing conclusions from the results of manipulating these symbols according to rules. Students will be introduced to a range of symbolic techniques, the practical uses to which these techniques can be put as well as their limitations. Courses will not focus solely on computational skills. Students will learn the concept of proof as a chain of inferences. They will learn to apply formal rules or algorithms; engage in hypothetical reasoning. In addition, students will develop the ability to use appropriate symbolic techniques in the context of problem solving and to present and critically evaluate evidence.

While modifying wording might have some impact, it is clearly not sufficient. And, as seen below, there are much more obvious, and problematic, causes for non-compliance.

**B. Lack of face-to-face advising resources**

The issue of increasing student compliance in meeting FS requirements by the end of the first year may be related to the level of university support for face-to-face advising. Feedback from several departments shows that advisors often have increasing difficulties to advise students on anything beyond major requirements due to the fact that many majors have large numbers of students. Nevertheless, students often seem to be in need of help regarding Gen. Ed. Requirements. This suggest that the advising units that should provide Gen. Ed. Advising are understaffed and/or perhaps hope to rely on more support from individual departments. Therefore, one solution could be to significantly enlarge advising staff in QLCSS.

**C. Unprepared students**

One of the major causes for non-compliance is that incoming students are unprepared to take FS courses and are likely to fail. This seems to be a well-accepted fact among our faculty. This leads the students satisfying the FS requirement late because they are (i) nervous about taking the course; (ii) failing the course. Here is an example feedback from a faculty member in the Philosophy Department: "There is undeniably a problem with the preparedness of students who enroll in our FS courses. PHIL 111 encounters the problem the Math Department has long recognized students have with the arithmetic of fractions. PHIL 110 encounters problems getting students to recognize and apply schematic diagrams of proof procedures. But a large part of the problem is what I issue the warning about on the first day: the fatal consequences of thinking one can learn the material without doing assigned exercises. (A substantial portion of the grade is made to depend on successfully completing exercises, but a substantial portion of the class does not get the message.)"

This issue is of course difficult to address, but unfortunately may be the one affecting student compliance the most. One possibility is to change the way in which we *teach* FS courses. One obvious approach would be to reduce class size, thereby leading to more interactive lectures. This is the approach taken recently by the MIT: [http://www.nytimes.com/2009/01/13/us/13physics.html?pagewanted=2&\\_r=1&emc=eta1](http://www.nytimes.com/2009/01/13/us/13physics.html?pagewanted=2&_r=1&emc=eta1), that has seen a large increase in number of students passing courses. The challenge then becomes budget, as new resources are needed. Lower-cost, but not zero-cost, options may exist. For instance, the ICS Dept. is contemplating adding recitation sessions to ICS141 so that students can have a more interactive experience, which should improve learning. Based on the MIT experience and others, this should make it likelier for

students to pass the course. This is of course provided they were compelled to enroll in the first place. But if FS courses become known as “not necessarily killer “ courses among our student population, there is a possibility that over the course of a few semesters the situation could improve.

#### **D. Is mandatory compliance the answer?**

The board is concerned that we should not look at compliance as the primary and sole concern, rather than asking whether we can ensure that the foundational courses, and in particular the FS courses, fulfill the intent of why they were initially developed. One glaring problem here is that the FS requirement (as may be the case for other Gen. Ed. requirements?) are often not complementary and/or integrated with majors. Isolation between FS requirements and major requirement leads to the situation in which advisors are caught between two sets of requirements that were not designed conjointly and in some cases do not mesh well. Furthermore, isolation contributed to fragmentation of the educational experience and may foster curricular incoherence. We gathered substantial (most of it verbal) feedback from major advisors that suggest that indeed, there is isolation and incoherence. For instance, here is feedback from one of the life science advisors: “In order to complete BS Biol/Zool degrees in 4 years it is necessary to get started as 1st semester freshman on Chem 161 and Biol 171 (total of 8 units). Chem and Biol courses constitute 8 units in each of the next 3 semesters. I would prefer that Zool/Biol majors be given the latitude to complete 1st semester Calc at some time in the first 6 semesters or 72 credits. This would give them more scheduling flexibility and still require they complete this symbolic reasoning course before taking the Biol/Zool courses where they have the highest probability of using calculus.” Note that there is also a push to have students declare/choose majors earlier, in which case mandatory 1<sup>st</sup>-year compliance may be seen as more problematic. Rather than simply focusing on compliance, it is perhaps time to “take a step back” and look at the whole picture. Besides, blindly enforcing mandatory compliance can have negative side effects beyond conflicts with specific major requirements. For instance, students could be taking a course they do not really need (e.g., take Phil 110 in year 1 and complete Calculus or ICS141 in Year 2). Another problem is students taking an FS course for which they are not prepared in their first year, along with other courses that are required by their major, and thus fail to learn basic material that is key to success in their majors. There is thus a concern that a sole focus on mandatory compliance (without having other measures in place) may have unexpected effects on retention and graduation rates.

It seems that a first useful step would be to establish communication between the GEC, the advising units, and the departments. In some cases it might be that some tweaks to some majors’ requirements could naturally lead to better opportunities for FS requirement compliance while benefiting the students at the same time. More likely is that there are, at least for some departments, some valid reasons why compliance with FS requirements in the first year is fundamentally at odds with major requirements. In this case, we, as a university, need to find solutions that benefit the students, which should be our main concern. There could be a meeting with each department, involving department advisors and GEC representatives, to find out if/why FS compliance in the first year is problematic given existing major requirements. A first solution in case of a problem would be to see whether relaxing compliance to be by the 2<sup>nd</sup> year would address the issue and be enforced. If this doesn’t work, then other solutions could be envisaged.

In summary, it really seems that the GEC should have a clear understanding of how Gen. Ed. requirements conflict with the major, via dialogue with all departments. Only once this understanding is acquired, will it be possible to examine the state of Gen. Ed. at UHM and come up with a reasonable plan.