

Systemwide Engineering Meeting

July 20, 2012

12 noon -230 p.m.

Bachman 203

Present: Tom Apple, Reed Dasenbrock, Peter Crouch, Bruce Liebert (UHM); Don Straney, Kenny Simmons, Ken Morris (UHH), Gene Awakuni and Jacque Kilpatrick (UHWO); John McKee, Mark Hoffman (UHMC), Linda Johnsrud and Joanne Itano (UH System)

Meeting Highlights

Linda provided the context of systemwide academic planning. President Greenwood has stated that we will be the best functioning system in the U.S. and because we have two year and four year campuses in the same system, we are able to be more effective in some areas. UH is here to serve every qualified student. We offer multiple entry points and in some situations, multiple exit points.

UHM College of Engineering (COE) graduates about 180 undergraduate engineering majors each year. About 90% of the civil engineers, 50% of the electrical graduates and 75% of the mechanical engineers (Pearl Harbor or construction) are employed in Hawai'i after graduation.

In terms of retirements, about 25% of the civil engineers are projected to retire in the next 10 years. For engineers employed by the federal government, the % retirement is expected to be very high in the next 10 years. The need for more engineers will also depend on if Hawai'i is able to develop a high tech industry, possibly in renewable energy.

On the neighbor islands especially, high tech jobs are often filled by visitors from the mainland who stay for a 3-5 years and return to the mainland.

One identified need of engineers is senior (experienced) engineers who often are recruited from the mainland. This does provide a source of high level jobs for UHM engineering graduates who left the islands after graduation and are now able to return. UHH is completing a survey of employer needs for the next 10 years. The observatories and Kona airport each need about 3-4/year. The survey is now focused on local companies on the Big Island. It is estimated that the total need would be about 10/year.

Maui reported that they surveyed their island in 2006 and 10-12 engineering technologists/year was the estimated need. The BAS in engineering technology is on track to graduate about 10/year. The first three graduates had job offers. The job availability depends on what is going on on Maui at the current time, i.e. if a new observatory is being build, there will be more jobs

for that year. Thus, the BAS program is broad based so graduates have options in employment when they graduate. Their graduates want to stay on Maui. If the students are thinking of going off island to attend an engineering program, they are more likely to transfer to a mainland school rather than UHM.

Pearl Harbor is interested in all categories of engineers as they retrain them based on their needs. It is estimated that of the 800 engineers currently employed, about 40% will retire in the next 3-5 years. Galen Ho is working with Pearl Harbor, HECO, UHWO and UHM COE to address this need. Since PH retrains their engineers, what is needed is a graduate of an accredited engineering program.

UHWO reports that Pearl Harbor came to them to discuss the need of a general engineering program because of costs (reduced tuition), regional access and that such a program is consistent with UHWO's mission. UHWO is still in the exploring stage and not ready to move forward on developing a general engineering program.

UHH has prepared an ATP for a general engineering degree which is eligible for accreditation by ABET. Three clusters (not majors) are identified: alternate energy, instrumentation and food technology. Discussions on number of graduates are ongoing. Don Straney stated that UHH is interested in limiting its student enrollment to about 5000, is not thinking of a college of engineering but a department of engineering and that a generalist engineer is needed to meet the workforce needs of the Big Islands.

The idea of having UHWO and UHH preparing students in the pre engineering curriculum and the students are duo-enrolled at UHM was discussed. UHH felt that Big Island students would more likely transfer to a mainland college than go to O'ahu for an engineering degree. The preference is to stay on the Big Island. UHWO identified the issue of traveling from the west side of O'ahu to UHM as a major barrier.

Currently, UHH and UHMC are working on offering the UHH marine science degree on Maui. UHMC has hired a marine science faculty to offer the UHH's marine courses on Maui. How can we offer a coordinated degree across campuses with a "local flavor" of the receiving island?

ABET will requires "real" faculty for any engineering program. Sources of engineering faculty for UHH include current (5) faculty who are engineers by education, currently teaching in related fields, two new positions, professors of practice and the UHM COE collaboration. The proposed UHH program will depend on course offerings by UHM COE faculty. Peter Crouch reported that it has been his goal that the COE serve the state. He established the Engineering Consortium which is currently focused on offering the pre engineering curriculum across the state. A survey of the COE faculty regarding their interest and willingness to offer courses by

distance resulted in positive responses from several faculty. It is challenging to move from interest/willingness to offer the course by distance. It may be that upper division courses may be “easier” to offer because of the background and maturity of the student. The issue of labs is a challenge for distance delivery. Mark Hoffman reported that he has used VTC in labs to Hawai‘i and Kaua‘I CCs. It is necessary to have faculty/staff at the receive site to assist the students in completing and understanding lab materials.

Since we currently have an underfunded COE, is it wise to grow two more underfunded engineering programs? The different models under discussion included: three free standing programs, collaboration between UHH/UHM in offering engineering courses across the two campuses, and 1 degree offered at different campuses.

UHM COE is not interested in offering a general engineering degree as they have developed their own list of priorities.

Additional comments from Ken Morris:

Chancellor Apple offered that the group should agree that UHH proceed as planned with the B.S. in Eng and there was no objection.

There was consensus that the program name should be changed to “General Engineering” instead of “Engineering Science”, which is also ABET recognized and falls under the same accreditation requirements.

Dean Crouch indicated that he would support all engineering efforts in the system as possible but was clear that he doesn’t want to reinstate GenEng at UHM. It was agreed that the UHH collaboration should be subject to the MOA/MOU (to be drafted at UHH).

UHM COE is needed for selected upper division courses the development of which (largely adapting for distance delivery) would be supported in part by UHH resources but COE is needed as a continuing collaborator (a paraphrased comment from me: they have already been active and generous in helping our planning process) in developing/accrediting the program to insure continuity between COE and UHH.

The concept of professional community engineers in a Preceptor program was well received and identified as a distinguishing element consistent with achieving the local general engineering goals.

Outcomes:

There is support for the general engineering program at UHH that includes collaboration with UHM COE.

An MOA will be prepared as part of the program proposal process. **UHH**

A statement of common purpose will be prepared. **UHH** will initiate and circulate to the group.

There will be a System PCR request on a Distance delivered/technology mediated general engineering program that includes support for faculty development, refurbishing rooms/labs for distance delivery, support to faculty for distance delivery, etc. – **Peter Crouch/Joanne Itano/Linda Johnsrud**

The ATP may move forward to CCAO when UHH is ready to proceed. **UHH**

The conversation with UHWO will continue. The model of offering the UHM degree at UHWO is to be explored.

The bigger issue of a “program sharing” model will be discussed at CCAO. Who counts what, what pays for what, what tuition should students pay etc. **Joanne/Linda**