Engineering Consortium
May 3, 2011
830 a.m. – 1 p.m.
College Hill

Meeting Summary

Present: Peter Crouch, Reed Dasenbrock, Tep Dobry, Joshua Kaakua, Bruce Liebert, Victor Lubecke, Myhraliza Aala and Daniel Jenkins (UHM); Jie Cheng (UHH); Maria Baustista, Louise Pagotto, Charles Sasaki, and John Rand (KCC); Erika Lacro (HCC); Eric Matsuoka (LCC), Jean Okumura, Richard Fulton, Brian Richardson and Letty Colmenares (WCC); Jim Yoshida (HawCC); John McKee and Mark Hoffman (UHMC); Michael Hannawald (KauCC); Peter Quigley (UHCC); Joanne Itano and Joanne Taira (UH System)

PEEC/IKE NSF Pre Engineering Grant

John Rand provided an overview of this grant whose goal is to graduate 124 Native Hawaiian engineers over five years. It is a cohort-based model. There are summer bridge programs at Kap, Maui and UHM starting in 2011. The students will participate in engineering activities and complete college level math classes. For summer 2011, the following bridge courses (6 weeks) are planned:

- Kap CC, high school to college students, cohort 1, Math 135/140, 29 students.
- Maui, completed first year of college, cohort 0, Math 205/206, 14 students.
- UHM, completed second year of college, cohort -1, Calc III/IV and physics lab, REIS internships, 16 students

For students who complete the bridge program in summer 2011, they will need to continue to progress in math. The following math courses are being offered in Fall 2011.

	UHM	UHH	Haw	Hon	Kap	Maui	Lee	Kauaʻi	UHWO	Win
Math 140	X			x	X online	x	x			x
Calc I	X	x		x	x	x	x	x	x	x
Calc II	X	x		x	x		x			
Calc III	X	x			x		x			x
Calc IV	X				x		x			

There is a need for students who complete a portion of a course in summer bridge program, to complete the rest of the course in the subsequent semester. CCs have developed a method for this to occur with remedial/developmental math courses.

Different campuses have hired staff for the following responsibilities:

Hon – retention specialist

Kap – recruitment specialist
Win – evaluator
Maui – fund faculty
Lee – fune online course development
UHM – coordinator for Native Hawaiian students

Math

UHM has established a STEM center with 50 seats to focus on math, organic chemistry and physics. Faculty will hold office hours in the lab. Student help will be available to students. This will open Fall 2011. Math department has hired four new assistant professions with interest in math education.

Tom Ramsey reported on a few changes in the UHM math department.

- Some math classes have a common final exam which will provide information on effectiveness of different teaching methods.
- Supplemental instruction is available.
- A few modules have been developed such as vectors in Calc I for engineering. This is available online with a pre/post test.
- Wikiwiki courses are free and non credit. They are focused on topics that do not fit in any math courses, i.e. complex numbers and arithmetic or beginning differential equations which is now covered in the "very heavy" calc II course. These are available anytime for student use.

There was discussion on having a calc III course for engineering student only to replace the current calc III/IV requirement. The engineering faculty will need to identify the math content needed for engineers beyond calc II. Math department is willing to design/offer such a course. The PEEC math group is looking at an experimental calc III course to replace the current calc III/IV. Bruce Liebert invited Eric Matsuoka or others from this group to attend the next COE curriculum committee.

Pre Engineering Curriculum

Kap will offer Phys 272 in Fall 2011, 35 students have registered for the course. This will meet both f2f and use Elluminate. Students will meet twice a week for 90 minutes to solve problems.

EE 160 – Tep piloted this course in spring 2011 and will offer one of his sections as an online section in fall 2011. In the spring 2011, 10 students participated, 1 dropped out, 3 did well, 2 did ok and 2-3 were not very successful. One concern is that these are freshman students who may not be ready for online courses or need some help in adjusting to online learning. Mark Hoffman offered to teach EE160 from Maui. EE160 will be offered online in Spring 2012.

EE 211- Victor reported that the course will be offered to 5-10 students as an online course in fall 2011. This course is circuit analysis and requires use of specialized equipment. He is still working on the details to have the equipment available to the online students. One idea is to use existing equipment on Maui, Kauaʻi, Hawaiʻi and Oʻahu. Mark Hoffman offered to help any EE 211 students on Maui.

The goal is for the above three courses to be offered online each semester.

CE 270 is already taught online by Kap and they are looking for a faculty to be trained to teach the course online.

Student preparation for online courses was discussed. Mandatory orientation or completion of an assessment on online learning readiness was suggested as strategies to address this concern. Joanne will send Tep and Victor current student assessment/preparation information for online learning websites.

The Office of the Executive Vice President for Academic Affairs/Provost funded the development of Calc I and II as online courses with DCDC. Eric Matsuoka and Jean Okamura will be the SME. The development of these courses will be helpful for the summer bridge students who may not finish calc I or II in the summer and can use the online course to finish the material of that course.

<u>COE Advising</u>

There is a movement to have COE advise pre-engineering students which will result in the hiring of an additional advisor. The pre engineering code has been available for 4-5 years and is useful for students who do not yet demonstrate a strong background in engineering. Tep has observed increased retention with students starting in pre engineering and then moving into engineering when ready. Joanne will convene a group to discuss an engineering specialization in the ASNS degree which currently has specializations in life and physical sciences and the possibility of auto admission (group met July 13, 2011)

<u>Other issues</u>

Mark Hoffman is exploring ways to include in the engineer technology program, other courses such as CE 270 or some EE courses that may be transferable to UHM COE. Currently some of the engineering technology courses transfer to the UNLV COE program.

John Rand asked about other grants that the group might apply. Areas to consider is what to do with the students between the summer bridge experiences (fall/spring), how to assist other students than NHs to succeed in engineering

Next meeting will be in the November 2011 with the following likely agenda items:

- Summer bridge experiences
- STEM outreach
    - Maui/Mark Hoffman
    - UHM – Monique Chyba from Math and others
    - Kap CC – how they manage their STEM program
- What does it mean to be a consortium?
    - Should related disciplines be invited
    - Market engineering options
        - Electronic technology
        - Engineering technology
        - ASNS
        - Pre engineering curriculum
        - Engineering
    - Computer engineering
        - Communication technicians from military have skills, but need theoretical knowledge in computer science
            - Who are the transfers into computer engineering? What kind of background do they have?
    - Cyber security